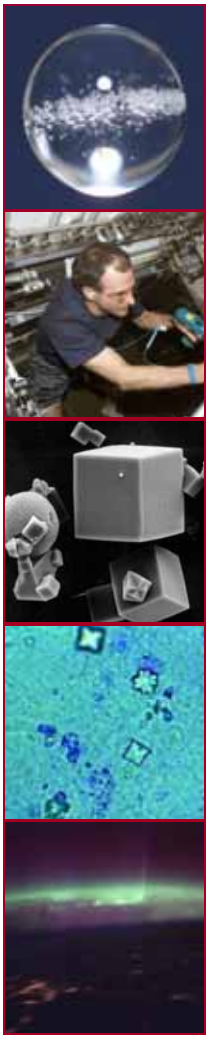
International Space Station Payloads Office
Customer Satisfaction Survey
Final Report and Analysis of Results

Increment 6



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EXECUTIVE SUMMARY

The International Space Station (ISS) Utilization Survey is conducted by the ISS Payloads Office at NASA/Johnson Space Center in order to collect feedback from ISS research users on processes and services related to the development, integration and operation of ISS research investigations. The Survey was inaugurated following ISS Increment 5 and is designed to be conducted following each ISS Increment thereafter in order to identify trends in ISS customer satisfaction and integrate them into decision making on ISS process improvements. The current report presents and analyzes results from the second cycle of the Survey, which was conducted following ISS Increment 6.

The Increment 6 interview group was comprised of 22 individuals from the total customer base of 28 Principal Investigators and Payload Developers that supported 18 Increment 6 research investigations. Feedback was collected from this group using essentially the same methods and questions employed for Increment 5, and comparative study of the results from Increments 5 and 6 is a primary focus of the current report.

After appropriate tests of statistical significance were applied to the portions of the Survey based on quantitative responses, the Increment 6 Survey results include the following principal trends relative to Increment 5:

- Higher overall customer satisfaction based on the Survey's Overall Satisfaction Index.
- Improvement in 33% of Survey topic areas covering customer loyalty, research outcomes, Program processes and customer support.
- No decrease in satisfaction in any Survey topic area.

In addition, demographic analysis of the Survey response data revealed differences in the level of respondent satisfaction that were significantly correlated with the NASA Research Program Office that supported the respondent's ISS investigation. The Increment 6 Survey also included a new feedback tool that gave respondents an open-ended opportunity to identify the attributes of Program processes and customer support that were the biggest drivers of their overall satisfaction.

Repeating the approach of the Increment 5 Survey, verbal feedback was solicited both to clarify rating-based responses and provide open-ended input on broader questions pertaining to Program strengths and weaknesses.

Based on end-to-end review of all components of the Increment 6 customer feedback components, an updated list of ISS Program customer satisfaction issues was developed and submitted for final prioritization and corrective action by the ISS Payloads Office line management.

KEY FINDINGS

- **Higher Increment 6 Customer Satisfaction.** Increment 6 respondents scored significantly higher on the Survey's 0 to 100 index of Overall Satisfaction compared to respondents from Increment 5. The Increment 6 Overall Satisfaction Index score of 73, compared to the Increment 5 score of 60, places the ISS Utilization Program slightly above the aggregate Federal Government (70) in rankings based on the American Customer Satisfaction Index.
- **Satisfaction with Program Processes and Customer Support Outweighs Dissatisfaction**. Of 24 surveyed topic areas pertaining to customer loyalty, research outcomes, Program processes and customer support, 21 (87%) had mean satisfaction ratings of Satisfied to Very Satisfied.
- **Improvement in 33% of Program Process and Customer Support Areas**. Of 24 surveyed topic areas pertaining to customer loyalty, research outcomes, Program processes and customer support, 8 showed statistically significant Improvement and 16 showed no statistically significant change between Increments 5 and 6. No area showed a statistically significant decrease in respondent satisfaction.
- **Satisfaction with Research Outcomes.** Increment 6 respondent satisfaction with the amount of raw data obtained by their investigations, as weighed against the effort required to conduct ISS research, was the highest of all topics covered by the Survey. Satisfaction with this area also increased significantly between Increments 5 and 6.
- **Dissatisfaction with Payload Data Library.** Direct use and Program use of the Payload Data Library were the only two Survey topic areas that had mean satisfaction ratings in the Dissatisfied range of the scale. There was no significant change in the level of satisfaction with these areas between Increment 5 and 6.
- **Consistent Demographic Trends.** Demographic analysis of responses pertaining to customer loyalty, research outcomes, Program processes and customer support shows consistently lowest levels of satisfaction among dual-role Principal Investigator/Payload Developers supporting Space Product Development investigations, and consistently highest levels of satisfaction among respondents supporting Human Life Sciences investigations.
- **Consistent Satisfaction with Program Management Areas.** No Management Area within the ISS Utilization Program received a dissatisfied rating on any point of service, or showed a statistically significant decrease in satisfaction with any points of service between Increment 5 and 6. At the same time, the majority of Management Areas were static with respect to respondent satisfaction between Increment 5 and 6, with only a few showing improvement.
- **People a Strength.** Of all specific Program products and points of service, respondents were most satisfied with the job skills, interpersonal qualities and dedication of the people within the ISS Program. People were most often cited as a Program Strength in verbal comments.
- **Processes a Weakness.** Ratings for the processes followed by Program Management Areas were generally in the satisfied range but were the lowest compare to all other Program points of service. Improvement in processes within some specific Management Areas was noted but most Survey questions that assessed processes showed no change between Increments 5 and 6. Processes were most often cited as a Program Weakness in verbal comments.
- **Improvement a Consistent Theme.** Seventy one percent (71%) of Increment 6 Survey respondents who had conducted research on previous ISS Increments considered their experience on Increment 6 was better or much better than their experience on previous Increments, and only 6% considered their experience was worse. The concept that "things are getting better" was a consistent theme reflected in respondent verbal comments.

1. Introduction

The International Space Station (ISS) Utilization Survey was developed under the direction of the ISS Payloads Office at NASA/Johnson Space Center in order to establish a methodology for collecting feedback from ISS research users on processes and issues related to the development, integration and operation of ISS research investigations. The first implementation cycle of the Survey was conducted following ISS Increment 5. The results from this initial survey cycle, as well as full background on the development history, rationale and implementation methods for the Survey are contained in the document *ISS Payloads Office Customer Satisfaction Survey Final Report and Analysis of Results – Increment 5* (available on-line at http://iss-www.jsc.nasa.gov/ss/issapt/payofc/I5finalreport.pdf). The Survey is a key feedback component within a set of integrated initiatives the ISS Payloads Office has taken to assess and improve the satisfaction of ISS research customers, defined explicitly as Principal Investigators (PIs), Payload Developers (PDs), and individuals who perform both roles in a dual capacity (PI-PDs). An overview of these initiatives is diagramed in Figure 1.

This report summarizes the results for the second implementation cycle of the ISS Utilization Survey conducted following ISS Increment 6. This Increment lasted from November 3, 2002, to May 3, 2003, and was supported by crew members Kenneth Bowersox (NASA), ISS Commander; Donald Pettit (NASA), Flight Engineer/Science Officer; and Nikolai Budarin (Rosaviakosmos), Flight Engineer. The post-Increment 6 Customer Satisfaction interview period began on June 24, 2003, and was completed on August 7, 2003. The interviews followed the same protocols previously detailed in the *Increment 5 Final Report*. The questionnaire used for the Increment 6 interviews was slightly modified from that used for Increment 5 as described below.

2. Increment 6 ISS Utilization Survey Questionnaire

The Increment 6 Survey questionnaire as provided to interviewees on line is available for review at www.inquisiteasp.com/cgi-bin/qwebcorporate.dll?APVTGZ. A condensed listing of the questions is provided for reference in Appendix A – ISS Utilization Survey Increment 6 Questionnaire. The Increment 6 questionnaire was augmented slightly relative to the Increment 5 version in order to collect more information on respondent demographics as well as new feedback on satisfaction factors and impacts from the Columbia mishap. In all other respects it had the same multi-part content of the Increment 5 questionnaire in which Part 1 – Cross-Program Feedback collects rating-based feedback that integrates across a respondent's experiences with all ISS Program areas, Part 2 assesses rating-based satisfaction with Specific Management/Functional Areas, and Part 3 collects thematically-directed verbal comments concerning Program Strengths and Weaknesses, Lessons Learned, and General Comments. Further information on the design and content of these parts of the Survey is contained in the *Increment 5 Final Report*.

The occurrence of the Columbia mishap on February 1, 2003, at approximately the half-way point of Increment 6, had multiple impacts on the planning and conduct of ISS research

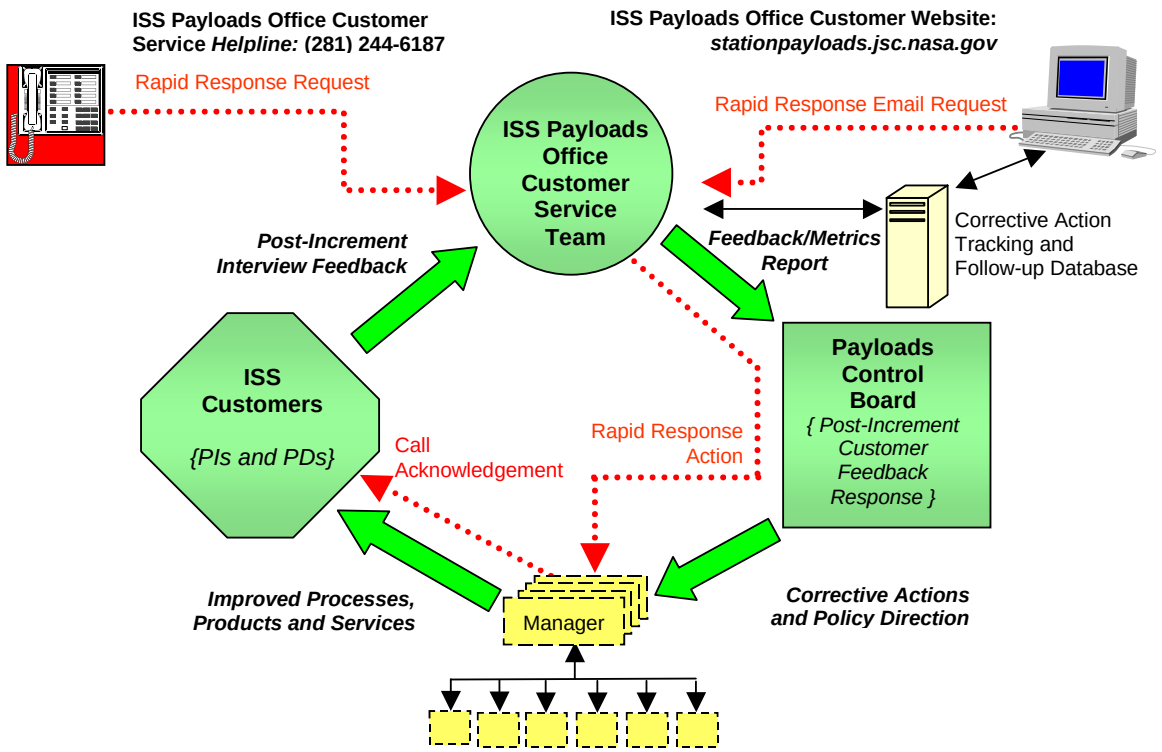


Figure 1. ISS Payloads Office Customer Feedback Process Flow

operations for the remainder of Increment 6 and beyond. In order to make a first order assessment of these impacts as related to the different requirements of the Increment 6 investigations, a single stand-alone question regarding the Columbia mishap was added to the Increment 6 questionnaire. The exact question wording, rating scale, and results for this question are provided in section 8.0 below.

Review and analysis of the Increment 5 Survey findings resulted in greater interest within the Payloads Office in casting a wider net to identify those attributes of ISS customer service that are key drivers of top-level, overall customer satisfaction. In order to investigate this topic, a new question was added to the Increment 6 questionnaire that gave respondents an open-ended opportunity to list up to three aspects of the Program that would have the highest impact on their overall satisfaction if those aspects were improved. The responses, which were categorized as Satisfaction Factors, are reported below in section 9.0 along with the results of the Survey's other open-ended feedback questions.

3. Increment 6 ISS Investigations and Survey Interviewees

A comprehensive list of the research investigations performed on the ISS during Increment 6 and the preceding Increment 5, together with the names of the PIs, PDs or PI-PDs who supported these investigations, is provided in Table 1. The names of individuals who for one reason or another did not participate in the post-increment Survey process are shown in *italics* (Table 1). For Increment 6, the Survey participation rate was 22 out of a possible 28, as compared to 34 out of a possible 35 for Increment 5. As shown in Table 1, most of the Increment 6 investigations were continuations from Increment 5, with the addition of only 3 new investigations. As a result, the majority of the individuals surveyed for Increment 6 had also participated in the Increment 5

Table 1. Increment 5 and 6 Investigation List with ISS Utilization Survey Participants

Investigation	*RPO*	*Increment*		*Increment 5 Interviewees*			*Increment 6 Interviewees*		
				Name	*Role*	*Organization*	*Name*	*Role*	*Organization*
CEO - Crew Earth Observations	Code M	5	6	Kam Lulla	PI	NASA Johnson Space Center	Kam Lulla	PI	NASA Johnson Space Center
				Sue Runco	PD	NASA Johnson Space Center	Sue Runco	PD	NASA Johnson Space Center
EarthKAM - Earth Knowledge Acquired by Middle School Students	Code M	5	6	*Karen Flammer*	*Co-I*	*University of California San Diego*	*Karen Flammer*	*Co-I*	*University of California San Diego*
				Brion Au	PD	NASA Johnson Space Center	Brion Au	PD	NASA Johnson Space Center
MISSE - Materials International Space Station Experiment	Code M	5	6	William H. Kinard	PI	NASA Langley Research Center	William H. Kinard	PI	NASA Langley Research Center
				Johnnie Engelhardt	PD	NASA Johnson Space Center	Johnnie Engelhardt	PD	NASA Johnson Space Center
BIOPSY - Effect of Prolonged Spaceflight on Human Skeletal Muscle	HLS	5	6	Robert Fitts	PI	Marquette University	Robert Fitts	PI	Marquette University
				David Baumann	PD	NASA Johnson Space Center	*David Baumann*	*PD*	*NASA Johnson Space Center*
Epstein-Barr - Space Flight-Induced Reactivation of Latent Epstein-Barr Virus	HLS	5	6	Raymond Stowe	PI	University of Texas Medical Branch	Raymond Stowe	PI	University of Texas Medical Branch
				Mark Anderson	PD	NASA Johnson Space Center	Mark Anderson	PD	NASA Johnson Space Center
EVARM - Extravehicular Activity Radiation Monitoring	HLS	5	6	Ian Thomson	PI	Thomson & Nielsen Electronics, LTD	Ian Thomson	PI	Thomson & Nielsen Electronics, LTD
				Michelle Kamman	PD	NASA Johnson Space Center	Michelle Kamman	PD	NASA Johnson Space Center
MOBILITY - Promoting Sensorimotor Response Generalizability: A Countermeasure to Mitigate Locomotor Dysfunction After Long-Duration Space Flight	HLS	5	6	Jacob Bloomberg	PI	NASA Johnson Space Center	Jacob Bloomberg	PI	NASA Johnson Space Center
				Suzanne McCollum	PD	NASA Johnson Space Center	Carla Guidry	PD	NASA Johnson Space Center
PuFF - Effects of EVA and Long-Term Exposure to Microgravity on Pulmonary Function	HLS	5	6	Kim Prisk	Co-I	University of California San Diego	Kim Prisk	Co-I	University of California San Diego
				Suzanne McCollum	PD	NASA Johnson Space Center	Suzanne McCollum	PD	NASA Johnson Space Center
Renal Stone - Renal Stone Risk During Space Flight: Assessment and Countermeasure Validation	HLS	5	6	Robert Pietryzk	Co-I	NASA Johnson Space Center	Robert Pietryzk	Co-I	NASA Johnson Space Center
				Michelle Kamman	PD	NASA Johnson Space Center	Carla Guidry	PD	NASA Johnson Space Center
Sub-Regional Bone – Sub-regional Assessment of Bone Loss in the Axial Skeleton in Long-Term Space Flight	HLS	5	6	Thomas Lang	PI	University of California San Francisco	Thomas Lang	PI	University of California San Francisco
				David Baumann	PD	NASA Johnson Space Center	*David Baumann*	*PD*	*NASA Johnson Space Center*
Improved Diffraction Quality of Crystals (**PCG-STES** investigation)	MRPO	5	6	Craig Kundrot	PI	NASA Marshall Space Flight Center	*Craig Kundrot*	*PI*	*NASA Marshall Space Flight Center*
				Dan Carter	PD	New Century Pharmaceuticals	*Dan Carter*	*PD*	*New Century Pharmaceuticals*
MAMS - Microgravity Acceleration Measurement System	MRPO	5	6	Richard DeLombard	PI	NASA Glenn Research Center	Kevin McPherson	PI-PD	NASA Glenn Research Center
				Bill Foster	PD	NASA Glenn Research Center	Bill Foster	PD	NASA Glenn Research Center
PCG-STES - Protein Crystal Growth - Single Locker Thermal Enclosure System	MRPO	5	6	Dan Carter	PI-PD	New Century Pharmaceuticals	*Dan Carter*	*PI-PD*	*New Century Pharmaceuticals*
SAMS-II - Space Acceleration Measurement System II	MRPO	5	6	Richard DeLombard	PI	NASA Glenn Research Center	Kevin McPherson	PI-PD	NASA Glenn Research Center
				Bill Foster	PD	NASA Glenn Research Center	Bill Foster	PD	NASA Glenn Research Center

Note: Names that appear in gray italics indicate individual did not participate in the survey/interview.

Table 1 (cont'd). Increment 5 and 6 Investigation List with ISS Utilization Survey Participants

Investigation	*RPO*	*Increment*		*Increment 5 Interviewees*			*Increment 6 Interviewees*		
				Name	*Role*	*Organization*	*Name*	*Role*	*Organization*
ZCG - Zeolite Crystal Growth Furnace	SPD	5	6	Al Sacco	PI-PD	Northeastern University	Al Sacco	PI-PD	Northeastern University
CHROMOSOME - Chromosomal Aberrations in Blood Lymphocytes of Astronauts	HLS		6	--	--	--	*Gunter Obe*	*PI*	*University of Essen, Germany*
				--	--	--	Mark Anderson	PD	NASA Johnson Space Center
FOOT - Foot/Ground Reaction Forces During Space Flight	HLS		6	--	--	--	Peter R. Cavanagh	PI	Cleveland Clinic
				--	--	--	Christian Maender	PD	NASA Johnson Space Center
InSPACE - Investigating the Structure of Paramagnetic Aggregates from Colloidal Emulsions	MRPO		6	--	--	--	*Alice P. Gast*	*PI*	*Massachusetts Institute of Technology*
				--	--	--	Jack Lekan	PD	NASA Glenn Research Center
EPO - Education Payload Operations	Code M	5		No formal PI	--	--			
				Cindy McArthur	PD	NASA Johnson Space Center			
Interactions - Crewmember and Crew-ground Interactions During ISS Missions	HLS	5		Nick Kanas	PI	University of California San Francisco			
				Christian Maender	PD	NASA Johnson Space Center			
Midodrine - Test of Midodrine as a Counter Measure against Postflight Orthostatic Hypotension	HLS	5		Janice Meck	PI	NASA Johnson Space Center			
				David Baumann	PD	NASA Johnson Space Center			
Xenon 1 - Effect of Microgravity on the Peripheral Subcutaneous Veno-arterior Reflex in Humans	HLS	5		Anders Gabrielsen	PI	Karolinska Hospital, Sweden			
				Suzanne McCollum	PD	NASA Johnson Space Center			
PFM - Toward Understanding Pore Formation and Mobility During Controlled Directional Solidification in a Microgravity Environment	MRPO	5		Richard Grugel	PI	NASA Marshal Space Flight Center			
				Linda Jeter	PD	NASA Marshal Space Flight Center			
SUBSA - Solidification Using a Baffle in Sealed Ampoules	MRPO	5		Alex Ostrogorsky	PI	Rensselaer Polytechnic Institute			
				Linda Jeter	PD	NASA Marshal Space Flight Center			
ADVASC - Advanced Astroculture	SPD	5		Weijia Zhou	PI-PD	University of Wisconsin			
MEPS - Microencapsulation Electrostatic Processing System	SPD	5		Dennis Morrison	PI-PD	NASA Johnson Space Center			
PGPA - Plant Generic Bioprocessing Apparatus	SPD	5		Alex Hoehn	PI-PD	University of Colorado			
Stelsys - Stelsys Liver Cell Research	SPD	5		Paul Silber	PI	StelSYS Inc.			
				Tom Goodwin	PD	NASA Johnson Space Center			

Note: Names that appear in gray italics indicate individual did not participate in the survey/interview.

survey. A straight-across comparison of the Increment 5 and 6 interview groups, showing the repeat customers, is provided in Table 2. Overall, the Increment 6 group numbers 22 as compared to 34 for Increment 5; the smaller number principally reflects smaller total number of investigations conducted on ISS during Increment 6 as compared to Increment 5.

Demographic information for the survey respondents was compiled from data collected on the questionnaire's Customer Information Page. A numerical breakdown of the Increment 5 and 6

Table 2. Increment 5 and 6 Interview Groups

Name	Role	Investigation(s)	RPO	Incr 5	Incr 6
Lulla	PI	Crew Earth Observations	Code M	✓	✓
Runco	PD	Crew Earth Observations	Code M	✓	✓
Au	PD	EarthKAM	Code M	✓	✓
Engelhardt	PD	MISSE	Code M	✓	✓
Kinard	PI	MISSE	Code M	✓	✓
Fitts	PI	BIOPSY	HLS	✓	✓
Anderson	PD	Epstein-Barr	HLS	✓	✓
Stowe	PI	Epstein-Barr	HLS	✓	✓
Thomson	PI	EVARM	HLS	✓	✓
Kamman	PD	EVARM, Renal Stone	HLS	✓	✓
Maender	PD	Interactions	HLS	✓	✓
Bloomberg	PI	Mobility	HLS	✓	✓
Prisk	PI	PUFF	HLS	✓	✓
McCollum	PD	PUFF, Xenon1	HLS	✓	✓
Pietryzk	PI	Renal Stone	HLS	✓	✓
Lang	PI	Sub-regional bone	HLS	✓	✓
Foster	PD	SAMS-II, MAMS	MRPO	✓	✓
Sacco	PI-PD	ZCG	SPD	✓	✓
McArthur	PD	EPO	Code M	✓	
Baumann	PD	BIOPSY, Subregional Bone	HLS	✓	
Kanas	PI	Interactions	HLS	✓	
Meck	PI	Midodrine	HLS	✓	
Gabrielsen	PI	Xenon 1	HLS	✓	
Carter	PI	PCG-STES	MRPO	✓	
Kundrot	PI	PCG-STES	MRPO	✓	
Grugel	PI	PFM	MRPO	✓	
DeLombard	PI	SAMS-II, MAMS	MRPO	✓	
Jeter	PD	SUBSA	MRPO	✓	
Ostragorsky	PI	SUBSA	MRPO	✓	
Zhou	PI-PD	ADVASC	SPD	✓	
Morrison	PI-PD	MEPS	SPD	✓	
Hoehn	PI-PD	PGPA	SPD	✓	
Silber	PI	Stelsys	SPD	✓	
Goodwin	PD	Stelsys	SPD	✓	
Guidry	PD	Renal Stone, MOBILITY	HLS		✓
McPherson	PI-PD	SAMS-II, MAMS	MRPO		✓
Cavanagh	PI	FOOT	HLS		✓
Lekan	PD	InSPACE	MRPO		✓

= Core group used for demographic analysis

interview groups into various demographic categories is provided in Table 3. In the present report, the specific four categories of Respondent Role, Research Program Office, Investigation Host Hardware, and Organization are the principal groups for which demographic differences in the response data are reported and noted.

4. Increment 6 Survey Analysis Methods

A principal design goal of the ISS Utilization Survey is to collect and analyze post-Increment feedback in a manner that supports quantitative tracking of Increment-to-Increment changes in ISS customer opinions and attitudes as related to satisfaction with Program processes and products. In keeping with this goal, the Increment 6 feedback results in the present report are analyzed and presented with emphasis on their changes relative to Increment 5. Part of the overall Survey development process has been the evaluation and selection, since completion of the Increment 6 interviews, of comparison strategies that fit the particular attributes of the

Table 3. Increment 5 and 6 Respondent Demographic Summary

	Incr. 5	Incr. 6
TOTAL SURVEY RESPONDENTS	**34**	**22**
PARTICIPATED IN PREVIOUS SURVEY	**N/A**	**18**
TOTAL INVESTIGATIONS	**25**	**18**
Respondent Flight History		
No Previous Increment	**10**	**3**
Previous (Continuation)	**20**	**19**
Previous (Re-Flight)	**4**	**0**
Role of Respondent		
Principal Investigator (PI) / Co-Investigator Only	**17**	**10**
Payload Developer (PD) Only	**12**	**10**
PI-PD Dual Role	**5**	**2**
Total	**34**	**22**
Research Program Office of Respondent		
Human Life Sciences	**15**	**13**
Microgravity	**5**	**3**
Office of Space Flight (Code M)	**8**	**5**
Space Program Development	**6**	**1**
Investigation Host Hardware		
EXPRESS Rack	**10**	**3**
Rack-level Facility (e.g. MSG, HRF)	**9**	**8**
Pre/Post Only	**7**	**5**
Unpressurized	**1**	**1**
Other	**6**	**4**
Organization of Respondent		
NASA	**21**	**15**
University	**10**	**6**
Private Sector	**3**	**1**
NASA Payload Developer (PD) Support		
Had NASA PD Support	**27**	**18**
Did Not Have NASA PD Support	**7**	**4**

Survey response data as well as the decision-making requirements of the ISS Payloads Office and other parts of NASA.

The comparison strategy that has been adopted combines the use of appropriate statistical measures to validate changes in response data between the two Increments, with a system of reporting metrics that supports efficient management decision-making on corrective actions. The strategy uses arithmetic mean scores as the principal basis for quantitative comparison of the response data from the rating-based questions in the Survey. The trade-offs associated with this selection are discussed with other statistical considerations in Appendix B – Statistical Methods.

In addition to response mean scores, comprehensive descriptive statistics have been calculated for the response data and are reported to support evaluations as needed.

An integrated system of comparative metrics tied to mean score values was established for summary reporting and analysis of results from Part 1 of the Survey, and were used to a lesser extent for analysis of the Survey Part 2 response data. The individual metrics developed within this system are:

- The *Overall Satisfaction Index (OSI)* metric developed and reported for the Increment 5 Survey has been repeated for Increment 6. The metric is calculated by taking the average of the mean scores of the three basis questions 1.1.1-Overall Satisfaction, 1.1.2-Expectations and 1.1.3-Ideal Organization, and recalculating it to a 0 to 100 scale. The basis questions are similar in form to those used in surveys for the American Customer Satisfaction Index (ACSI), a nationally recognized index that compares customer satisfaction across commercial industry as well as public-sector organizations. The OSI is therefore used as an approximation to the ACSI for the purpose of making a first-order comparison to ACSI data for other organizations.

- A *Current Level of Satisfaction* metric was established for all questions in the Survey that have rating scales anchored either directly to satisfaction or indirectly to satisfaction through "higher is better" measures of service. The metric assigns a *Satisfaction Level* to each question based on its Increment 6 mean rating score recalculated to a 0 to 100 scale (scaled mean score), with Very Satisfied = 100 to 85, Satisfied = 85 to 55, Neutral = 55 to 45, Dissatisfied = 45 to 15, Very Dissatisfied = 15 to 0. For questions in Survey Part 1 a second *Satisfaction Ranking* metric is reported that is based on the ranking of the scaled mean score against other Part 1 questions. Rank is given both sequentially and on a percentile basis (percentage of questions that have a lower scaled mean score). Numerical *Satisfaction Rankings* are not consistent with the organizational structure of Part 2 of the Survey and are not reported. However, internally consistent qualitative satisfaction rankings of Survey Part 2 questions can be discerned from graphed data reported below.

- An *Increment Comparison* metric is reported for each question based on the difference between its Increment 6 and Increment 5 mean scores. Within the metric, questions are classified as either *Improving* if they show a statistically significant positive change in mean score between Increments 5 and 6, or as *Getting Worse* if they show a statistically significant negative change in mean score. Questions whose difference in mean score is not judged to be statistically significant are put in a *No Significant Change* category. The analysis and criteria used to determine statistical significance in these cases are described in detail in Appendix B – Statistical Methods. For questions in Part 1 of the Survey that show statistically significant positive or negative changes in mean score a *Comparison Index* and a *Comparison Index Ranking* are calculated based on the change in a question's mean score as a percentage of the rating scale. The Comparison Index Ranking ranks questions based on their Comparison Index both on a sequential and percentile basis.

- The *Current Level of Satisfaction* and *Increment Comparison* results for Survey Part 1 questions are summarized in an *Overall Status* roll-up metric that uses a system of modifying adjectives and "stoplight" categories to summarize the satisfaction trend and satisfaction status for each question respectively. Questions are placed into "stoplight" categories

according to Green = Very Satisfied /Satisfied, Yellow = Neutral, and Red = Dissatisfied/Satisfied. Modifying adjectives are then applied to these categories according to their Increment Comparison metric with Super = Improving, Neutral = No Significant Change, and Sub = Getting Worse. Under this system, a question designated as Super Green, for example, would have an Increment 6 mean rating score in the Very Satisfied or Satisfied Range (scaled mean score 55-100), and a statistically significant positive change in mean score between Increment 5 and 6.

5. Increment 5 and 6 Comparison Overview

5.1 Comparison Overview Data Plots

Data plots providing an overview comparison of the Increment 5 and 6 response results for Parts 1 and 2 of the Survey are shown in Figures 2, 3, and 4. The Figures plot the Satisfaction Level scores for each question as horizontal bars, with the bars sorted and organized vertically according to classification as Improving, Getting Worse, or showing No Significant Change. The

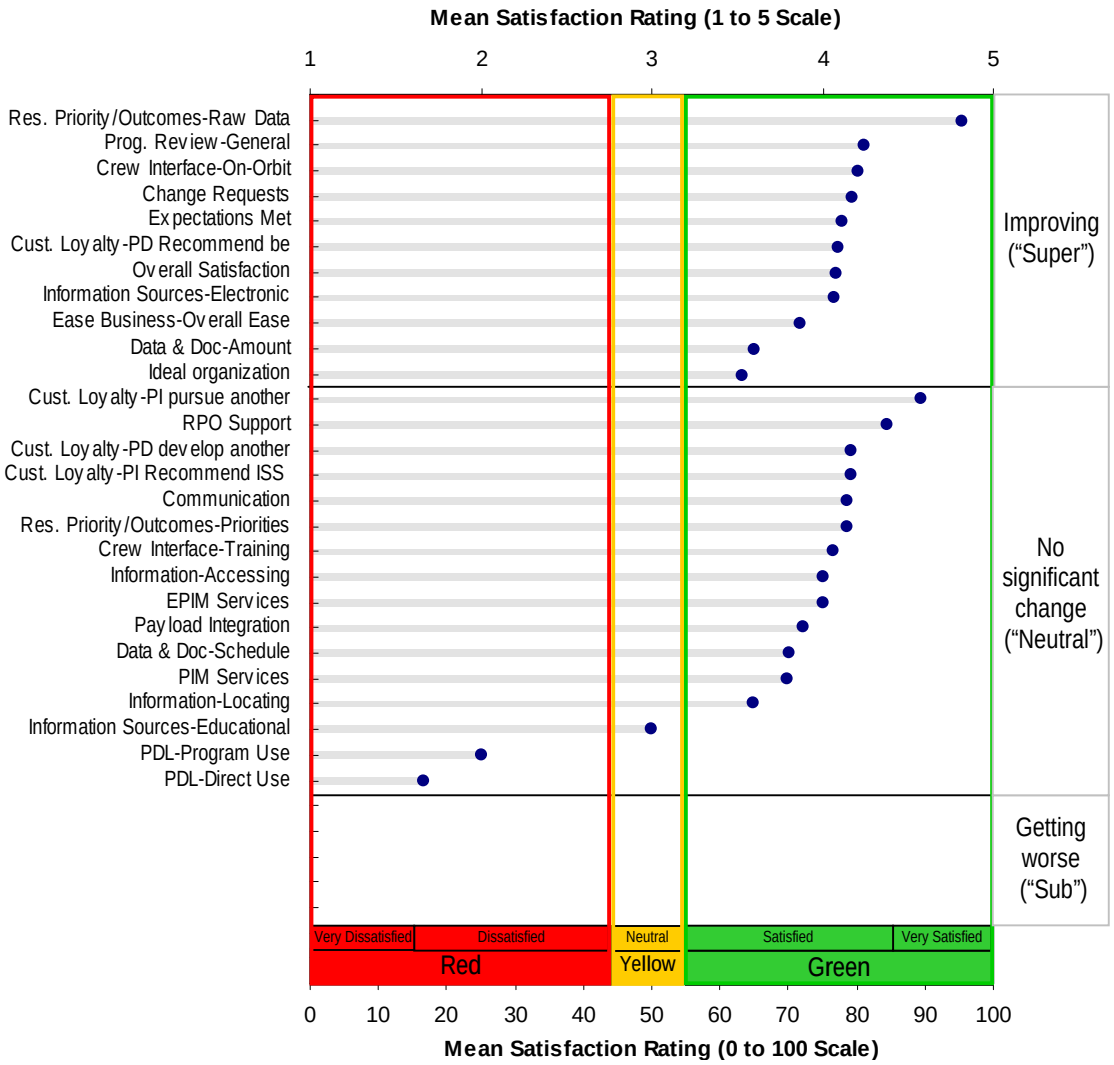


Figure 2. Increment 6 Mean Satisfaction Ratings (Satisfaction Level) versus Increment Comparison metric classifications for Survey Part 1 Questions

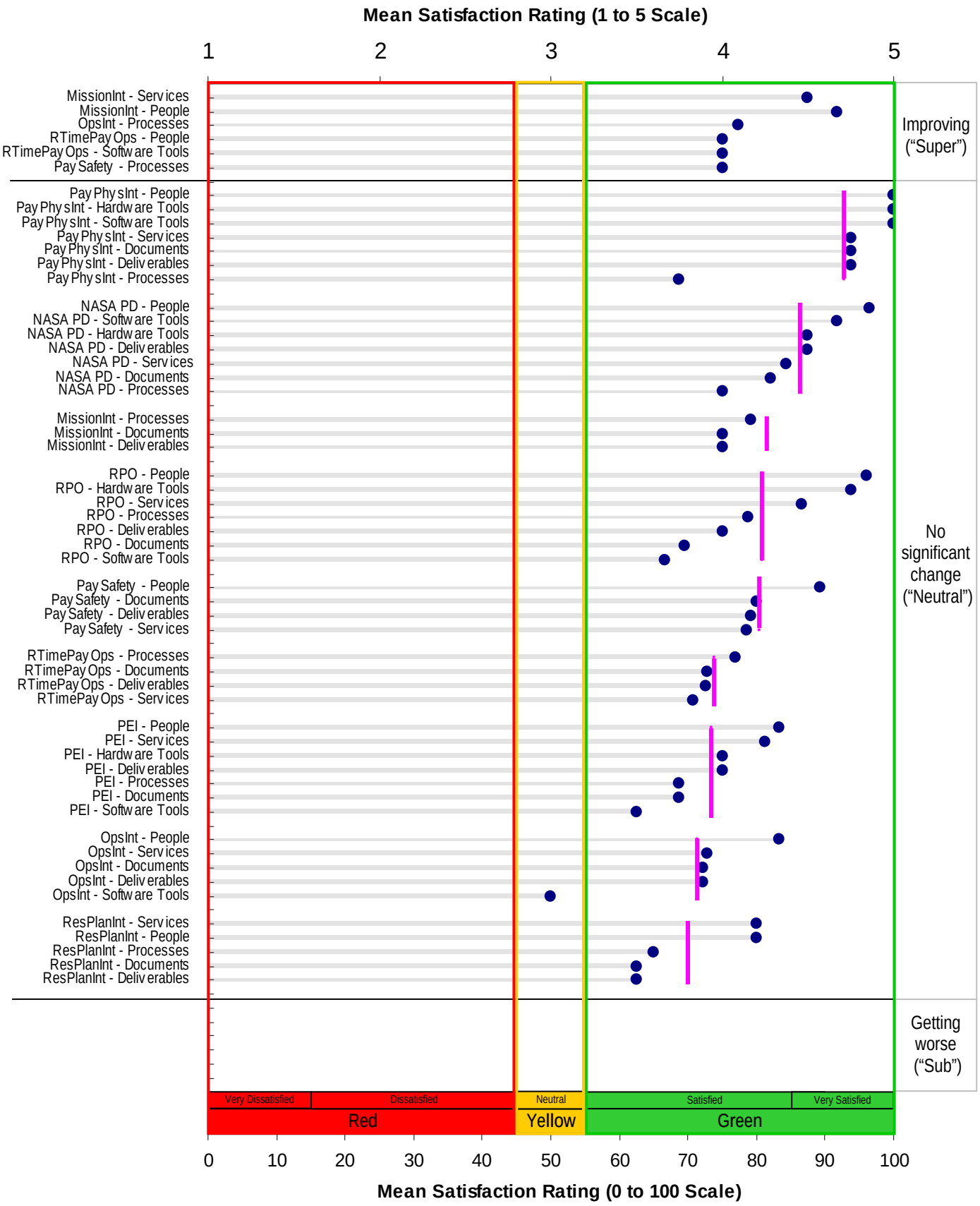


Figure 3. Increment 6 Mean Satisfaction Ratings (Satisfaction Level) versus Increment Comparison metric classification for Survey Part 2 Questions Group by Management Area. The mean score within each group is shown by the vertical line segments.

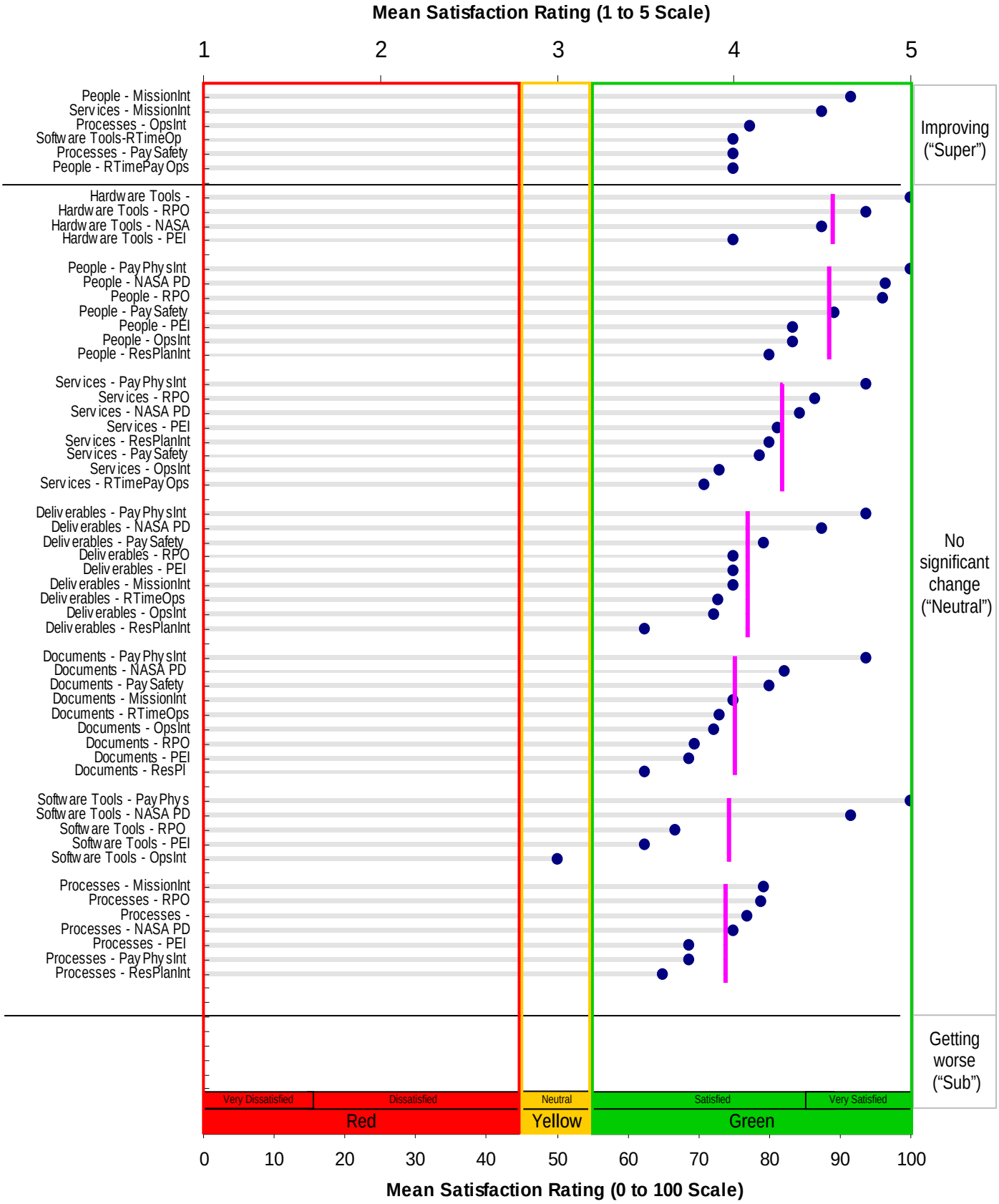


Figure 4. Increment 6 Mean Satisfaction Ratings (Satisfaction Level) versus Increment Comparison metric classification for Survey Part 2 Questions Grouped by Product/Service Points of Interaction. The mean score within each group is shown by the vertical line segments.

Satisfaction Level stoplight categories are included along the horizontal axis to divide the plot space into a set of nine quadrants that give the Overall Status metric for each question. For the Survey Part 2 results, different perspectives on the data are provided by grouping questions according to Management Area in Figure 3, and according to product and service Points of Interaction in Figure 4. Within these plots the groupings are ranked in order based on the mean of the Satisfaction Level scores for their component questions, which is shown by the vertical line segment within each group.

5.2 Survey Part 1 - Increment Comparison Overview

5.2.1 Overall Satisfaction Index (OSI) Basis Questions

The Increment 6 Satisfaction Level scores for the OSI basis questions are plotted with the results for the other Part 1 Survey questions in Figure 2. All three OSI questions plot in the Super Green quadrant. Within the OSI group, question 1.1.2-Expectation ranks higher in Increment 6 Satisfaction Level compared to 1.1.1-Overall Satisfaction which is in turn higher than 1.1.3-Ideal Organization. The OSI questions have mixed rankings within the complement of other Part 1 questions that fall in the Super Green category. The rating of how close the Program comes to an ideal organization (1.1.3-Ideal Organization) ranks lowest in Increment 6 Satisfaction Level of all questions in the Super Green quadrant.

A detailed comparison of the changes in OSI basis question rating scores between Increments 5 and 6 is shown in Figure 5. Within the OSI group, 1.1.3-Ideal Organization showed the greatest improvement with a +16.3% Comparison Index, followed by 1.1.2-Expectations (+14.4%) and 1.1.1-Overall Satisfaction (+8.1%). The improvement in score for 1.1.3-Ideal Organization not only ranks highest among the OSI basis question but is also highest of all the Survey Part 1 questions in the Super Green quadrant. Conversely, 1.1.1-Overall Satisfaction ranks lowest in improvement within the OSI group and is also lowest of all Improving questions.

The OSI value obtained for Increment 6 from the OSI basis question mean scores is compared to the Increment 5 value as well as to ACSI score for other organizations in Table 4. The Increment 6 OSI value of 73 is notably higher than the Increment 5 score of 60, and advances the ISS Utilization Program higher in the ACSI ranking to a position that is comparable to the Federal Government aggregate score. For additional comparison, the latest comprehensive listing of ACSI scores is available at www.theacsi.org. This website includes a page with a recent compilation and analysis of ACSI scores for government agencies and organizations (www.theacsi.org/government.htm).

5.2.2 Specific Topic Questions

For the remaining 24 questions in Part 1 of the Survey that covered specific feedback topics, and that were based on inter-comparable, satisfaction-based rating scales, the following general results are apparent based on the relationships in Figure 2:

- Respondents were Satisfied to Very Satisfied with a total of 21 of the 24 topic areas surveyed for Increment 6, and Dissatisfied with only 2 topic areas.

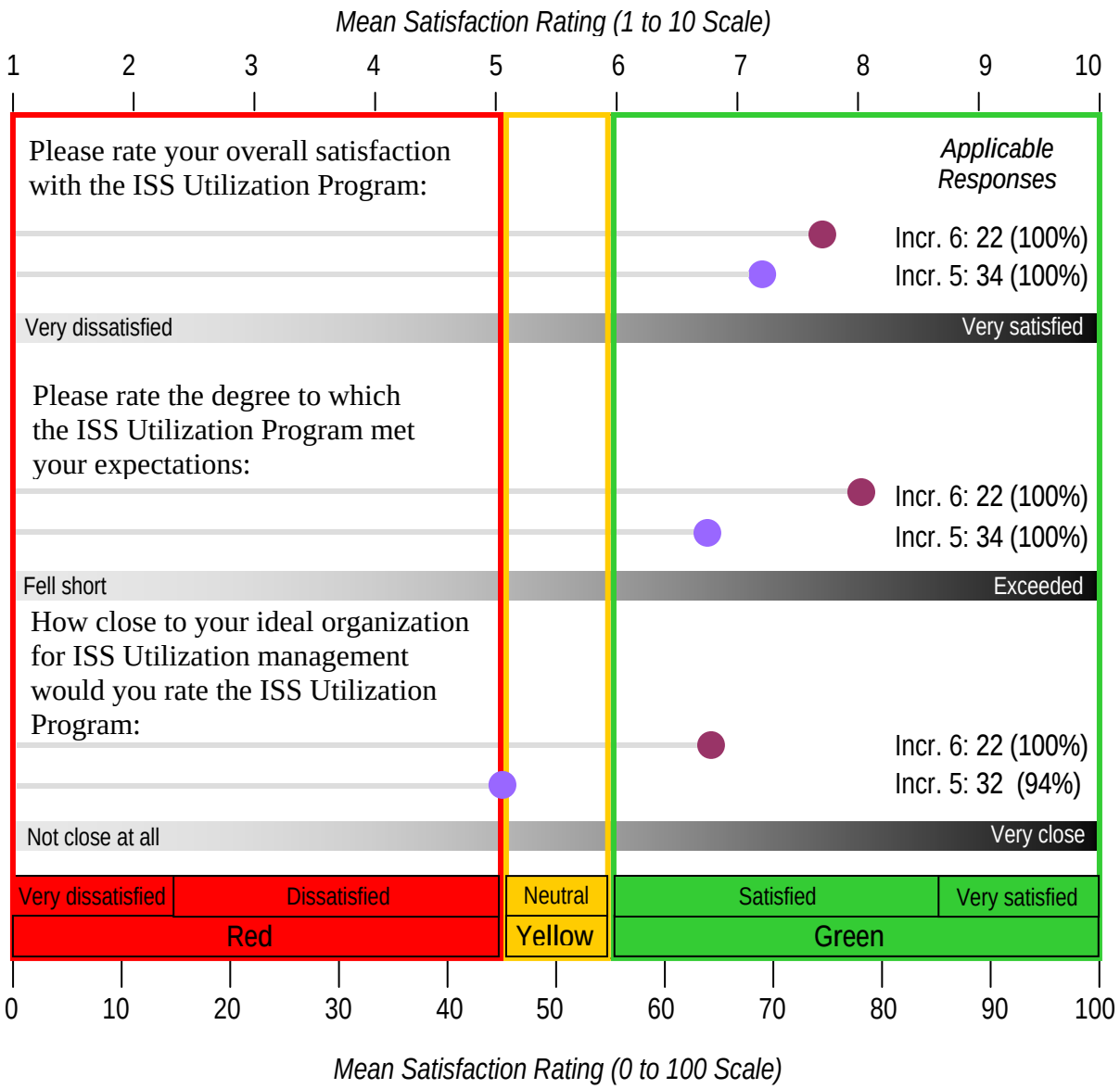


Figure 5. Increment 5 and 6 Mean Satisfaction Ratings with Satisfaction Level Metrics for Overall Satisfaction Index (OSI) Basis Questions

- Direct use and Program use of the Payload Data Library were the only two survey topics that had Satisfaction Levels in the Dissatisfied range of the scale. There was no significant change in the level of satisfaction with these areas between Increments 5 and 6.

- Between Increment 5 and Increment 6, 8 topic areas showed significant Improvement and 16 showed No Significant Change. No surveyed topic areas could be classified as Getting Worse (had statistically significant decreases in mean score).

- No questions changed stoplight status between Increment 5 and 6. (All of the questions with statistically significant changes in mean score were Improving, and were already in the Green range (satisfied/very satisfied) based on their Increment 5 mean scores.)

Table 4. Comparison of Increment 5 and 6 Overall Satisfaction Indices (OSI) to American Customer Satisfaction Index (ACSI)

ACSI INDUSTRY RANKINGS	Score
Amazon.com	84
Retail Industry *(aggregate)*	75
ISS Utilization Program Increment 6 OSI	**73**
Federal Government *(aggregate)*	70
Kmart	70
NASA/Glenn Research Center	67
Internal Revenue Service *(tax filers)*	62
McDonald's	61
ISS Utilization Program Increment 5 OSI	60
National Science Foundation *(grantees and applicants)*	58
Federal Aviation Agency *(commercial pilots)*	56

Reference: American Customer Satisfaction Index (ACSI) 2003 www.theacsi.org

- Among the Increment 6 Survey questions with Super Green status, the standout with the highest Satisfaction Level was satisfaction with the amount of raw data collected during Increment 6 (Question 1.1.5). Most of the remaining Super Green questions were relatively similar to one another in Level of Satisfaction and most scored solidly in the Satisfied range of the Scale. The amount of data and documentation required to meet Program requirements (Question 1.2.6) had the lowest Increment 6 Satisfaction Level of all question in the Super Green quadrant.

- There is no trend evident regarding the general types of questions falling into the different status quadrants of Figure 2. For example, the Super Green (satisfied and improving) and Neutral Green (satisfied but not changing) quadrants are roughly similar in the relative proportion of questions they contain that pertain to Program Processes as opposed to Customer Support.

5.3 Survey Part 2 – Increment Comparison Overview

Review of the Satisfaction Level quadrant plots for Survey Part 2 in Figures 3 and 4 reveals the following general trends and relationships:

- Compared to Part 1 of the Survey, Part 2 had a higher proportion of questions (89% compared to 60%) showing No Significant Change in mean score between Increments 5 and 6. This is interpreted to reflect overall poorer statistical sensitivity in the Part 2 rating data tied to a lower rate of applicable responses. This is in turn appears to be connected to respondents being relatively less familiar with the detailed Program areas explored by Part 2 as compared to Survey Part 1.

- No Part 2 question had a Satisfaction Level in the Very Dissatisfied/Dissatisfied range. One question had a Neutral Satisfaction Level and the remaining 54 questions had Satisfaction Levels well in the Satisfied to Very Satisfied range.

- Between Increment 5 and 6, 6 topic areas covered in the Part 2 set of questions showed significant Improvement, none was classified as Getting Worse.

For the Part 2 response results grouped by Management Area in Figure 3, the following results are noted:

- Across the Management Areas defined for Survey Part 2, the interpersonal attributes of management area personnel (People) more consistently received the highest Level of Satisfaction rating compared to other product and service points-of-interaction.
- When compared on the basis of average Satisfaction Level (vertical lines in Figure 3), Payload Physical Integration and NASA Payload Development are the two highest rated management areas, and Research Planning and Integration and Operation Integration are the two lowest.

For the Part 2 response data grouped by Product and Service Point-of-Interaction in Figure 4, the following results are noted:

- Payload Physical Integration was the management area most often receiving the highest Satisfaction Level rating compared to other management areas.
- On the basis of average Satisfaction Level (vertical lines in Figure 4), People and Hardware Tools are the two highest rated Product and Service Points-of-Interaction, and Processes and Software Tools are the two lowest.

6. Survey Part 1 Comprehensive Response Data and Verbal Comments

Comprehensive response data, descriptive statistics, increment comparison metrics and demographic trends for all questions in Part 1 of the Survey are summarized below using a datasheet format. The datasheets include the transcribed Increment 6 verbal comments for each question, with lines separating the comments received from each interviewee.

As was done in the Increment 5 report, the datasheets have been re-grouped for reporting purposes into Topic Areas that relate to particular products, services, or performance aspects of the ISS Utilization Program. These Topic Areas were not listed in the questionnaire itself, and they do not necessarily align with the numerical order of the questions in Part 1 of the Survey.

The following provides an explanatory key to the data sheet components:

MANAGER'S TOOL BOX: Contains a set of four at-a-glance metrics and summaries considered the most useful to ISS Payloads Office management for judging corrective action and process improvement in particular problematic areas.

1. NOTABLE FINDINGS: Summarizes aspects of Survey question quantitative results and/or verbal comments that may be of particular interest for further investigation for process improvement or corrective action.

2. CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING: Each Survey question from Part 1 with a satisfaction-based rating scale (or a similar scale in which "higher is better") is assigned a *Satisfaction Level* and a *Satisfaction Ranking. Satisfaction Level* is based on the Increment 6 mean rating score recalculated to a 0 to 100 scale (scaled mean score), with Very Satisfied = 100 to 85, Satisfied = 85 to 55, Neutral = 55 to 45, Dissatisfied = 45 to 15, Very Dissatisfied = 15 to 0. *Satisfaction Ranking* is based on the ranking of the scaled mean score

against the scaled mean scores for the other satisfaction-based questions from Survey Part 1. Rank is given both sequentially and on a percentile basis (percentage of questions that have a lower scaled mean score).

3. INCREMENT COMPARISON: Survey Part 1 questions based on level of satisfaction or comparable "higher is better" rating schemes are assigned a *Comparison Index* and a *Comparison Index Ranking* based on the difference between their Increment 6 and Increment 5 scaled mean scores. As calculated, the *Comparison Index* represents the change in a question's mean score as a percentage of the rating scale. Comparison Indices are only calculated and reported for questions whose difference in mean score outside the 80% confidence level of a T-test (> 80% chance the mean scores are statistically different). All questions that met these criteria were *improving* (i.e., had positive Comparison Indices) and the *Comparison Index Ranking* provides the relative ranking of only these improving questions based on their Comparison Indices.

4. OVERALL STATUS: Provides roll-up status for a question's level of *Improvement* and level of *Satisfaction*. The *Improvement* status is linked, based on the Student t test statistical criteria described above, to the Comparison Index as follows:

Super – Statistically significant <u>increase</u> in mean score between Increments 6 and 5
Neutral – No statistically significant change in mean score between Increments 6 and 5
Sub – Statistically significant <u>decrease</u> in mean score between Increments 6 and 5.

Satisfaction is linked to Current Level of Satisfaction according to:

Green – Satisfied or Very Satisfied (Increment 6 Scaled Mean Score > 55)
Yellow – Neutral (Increment 6 Scaled Mean Score 45 to 55)
Red – Dissatisfied or Very Dissatisfied (Increment 6 Scaled Mean Score < 45)

Response Descriptive Statistics: Tabulates and compares the following descriptive statistics for the Increment 5 and Increment 6 responses for all questions in Survey Part 1.

No. respondents: The total number of individuals in the Survey interview group for each Increment.

Applicable responses: The total number of individuals who responded to the question with a numerical rating response (as opposed to a "Not Applicable" response, or no response).

Mean Score: The average of the numerical rating scores for each Increment.

Scaled mean score: Mean rating score recalculated on the basis of a 0 to 100 scale.

Mean score Δ: The Increment 5 mean rating score subtracted from the Increment 6 mean rating score.

Standard error: Standard error of the mean of the numerical rating scores. Calculated as the standard deviation of the scores divided by the square root of the number of responses.

T-test: Percent probability that the Increment 6 and Increment 5 mean scores are statistically different based on the T-test statistic described in Appendix B – Statistical Methods.

Chi-square test: Percent probability that the frequency distribution of the Increment 6 scores is statistically different than the frequency distribution of the Increment 5 scores based on a multinomial goodness-of-fit test as described in Appendix B – Statistical Methods.

Median score: Rating score median values.

Skewness: Degree of asymmetry of the distribution of rating scores around their mean value. Positive skewness indicates a distribution with an asymmetric tail extending toward more positive values, with the median less than the mean, and higher scores over-represented in the mean. Negative skewness indicates a distribution with an asymmetric tail extending toward more negative values, with the median greater than the mean, and lower scores over-represented in the mean.

10th percentile score: Gives the rating score defining the boundary between the bottom 10% and top 90% of the score distribution. This statistic provides insight into the level of satisfaction of the least satisfied sub-set of respondents.

% Dissatisfied: Percentage of respondents scoring a 4 or less on 1-to-10 scale questions, or 2 or less on 1-to-5 scale questions.

% Satisfied: Percentage of respondents scoring a 6 or greater on 1-to-10 scale questions, or 4 or greater on 1-to-5 scale questions.

All Interviewees Response Distribution: Histograms showing relative frequency of rating scores, as percentages of the total number of applicable responses, for the Increment 5 and Increment 6 interview groups.

Demographic Trends from Incr. 5 and 6 "Core" Response Group: Provides a brief summary as well as plotted score frequency distributions and mean scores for different demographic *groups* of respondents defined within various demographic *categories*. The categories include the respondent's *Role* (PI, PD, PI-PD), *Research Program Office* (Code M, HLS, MRPO, SPD), *Payload Hardware* (EXPRESS, Rack-level Facility, Pre/Post, Unpressurized), and *Type of Host Institution* (NASA, University, Private Sector). The analysis used a "core" data set from 38 respondents drawn from both the Incr. 5 and Incr. 6 interview groups in order to better reveal trends by improving the statistical base. As noted in Table 2, this core group consists of: (1) PIs and PDs interviewed for Incr. 5 whose investigations did not continue into Incr. 6, (2) PIs and PDs interviewed for Incr. 6 associated with investigations conducted on both increments, and (3) PIs and PDs from investigations started on Incr. 6.

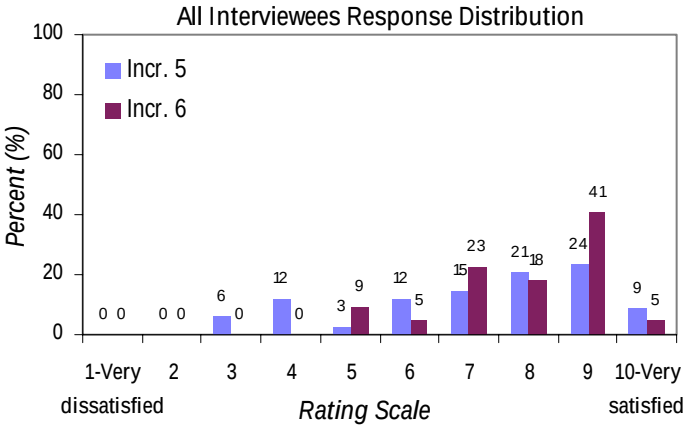
Topic Area: Overall Satisfaction – Overall Satisfaction Index
Question 1.1.1 – *Please rate your overall satisfaction with the ISS Utilization Program.*

MANAGER'S TOOL BOX	OVERALL STATUS	
NOTABLE FINDINGS: No Incr. 6 respondents are overall dissatisfied with the ISS Utilization Program (improved from 18% dissatisfied for Incr. 5.). Russian post-flight logistic support, program improvements tied to satisfaction; time-to-flight tied to dissatisfaction	*IMPROVEMENT*	*SATISFACTION*
	Super	
	Neutral	Green
	Sub	

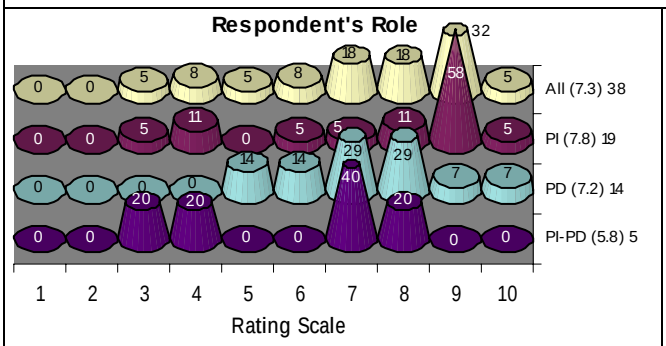
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *Improving*
Satisfaction Level: Satisfied	*Comparison Index:* +8.1%
Satisfaction Ranking: 13th of 27 (54th percentile)	*Comparison index ranking:* 11th of 11 Improving areas (0th percentile)

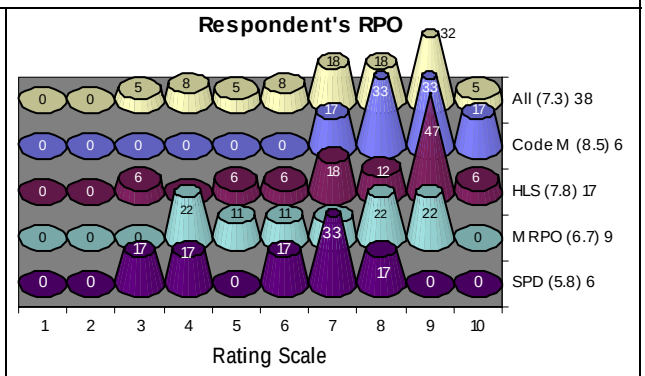
Response Descriptive Statistics

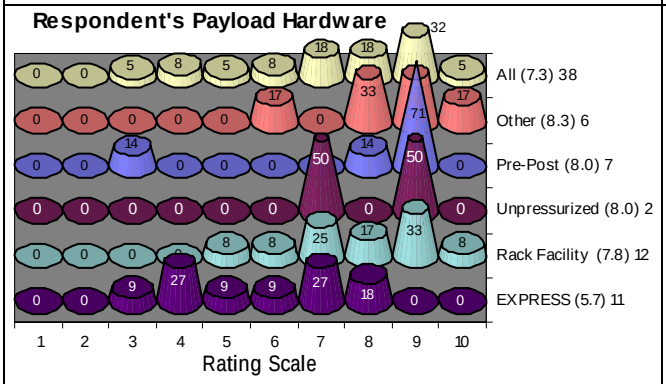
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	22 (100.0%)
Mean score:	7.2	7.9
Scaled mean score:	68.6	76.8
Mean score Δ:	--	0.7
Standard error:	0.35	0.29
T-test:	--	85.1
Chi-square test:	--	89.9
Median score:	8	8
Skewness:	-0.62	-0.78
10th percentile score:	4	6.1
% dissatisfied:	18%	0%
% satisfied:	68%	86%

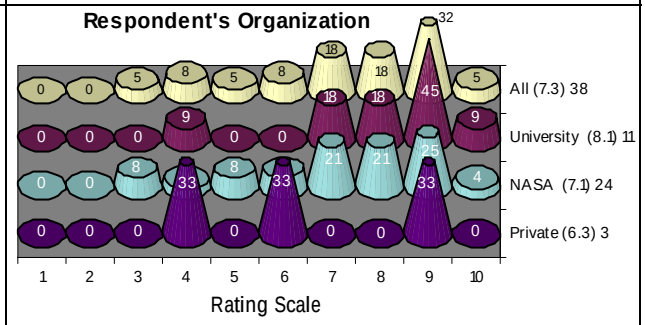


Demographic Trends (Summary): PI-PDs, SPD RPO, EXPRESS Rack Investigations, and respondents from the Private/Commercial sector score notably lower than other groups (but still marginally satisfied).









Question 1.1.1 – *Comments*

- can't give too high or too low because of minimal experience

- on the negative side, takes a bit too long to work through requirements for system; some pix taken but didn't get notification that hardware pix were taken (Increment 6 in specific); better communication was needed, too slow

- I would give it a 7; I think that here is a big one, given that over all program, top-level stuff as I interpret this; the big issue again comes up to be, is 'time to flight' and that sort of stuff; just the whole time from {unintelligible} to flight; and the reason that I am not more dissatisfied, I guess, is that I recognize that even at this stage, we are in development of the vehicle and things like that, mitigating circumstances; but, nevertheless, it is something that needs to worked on as people come into the program {unclear}

- EarthKam now well established, processes well understood

- kind of a learning curve, will comment later

- Increments 5 & 6 were smooth Increments, few problems if any

- overall process is improving, at least it seems to me that Utilization folks are more sympathetic to the problems we are having; we have a long way to go, but moving in the right direction

- we're only doing pre- and post-flight experience; we had a unique experience, went out to Star City, Russia, had an incredible experience; ours was a little different, was not a nominal flight for us

- Helen gave it a 5, I'll go with hers; obviously we feel things have improved from 5 to 6, but still lots of room for improvement

- highly satisfied, when we were able to get onto Increment 6, got a lot more data that was meaningful to our experiments; previous experiment was less radiation and were able to pick up more radiation data from the sun; Increment 6 was a back up flight, were supposed to get all data on first Increment; if we had stuck with original plan, would not have been as useful

- whole activity has been very responsive, been able to get integrated much quicker than normal; Marshall has been very helpful with our PEC (Passive Experiment Container)

- improvements in reducing length of time from definition phase to be manifested

- pretty satisfied; we have a pre-flight access to the crew for drawing blood, and had also good support in Russia, post flight

- still difficult environment to work in and get things done {unclear}

- got all the help that I need, helpful

- will talk about this in lessons learned and things that did not go right, had some major problems {unclear}

- make that an 8, and that to me that is a high rating, real tough to get a 10; and the reason for an 8, some very good things were that the help from, say, the PIM but also our Code M Research Program Office was very good, as far as assisting with documentation or knowing what was due up front; and then the LIS (Lead Increment Scientist) was always willing to help; and I think that the reason for not a 9 the there is still a lack of method for passdown between LIS, TLCO (Time Line Change Officers) and POD's; and sometimes it seems like that the word doesn't get passed along, or it is becomes very difficult to get information to the crew for whatever reason; so that can be (unintelligible...) {unclear}

- nothing bad; the Russian logistic support, for post-flight data collection activities, given contingency nature of that action, things went very well

Topic Area: Overall Satisfaction – Overall Satisfaction Index
Question 1.1.2 – *Please rate the degree to which the ISS Utilization Program met your expectations*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: All Incr. 6 respondents rate the Program as meeting or exceeding their expectations. Russian post-flight logistic support, program improvements, science results tied to satisfaction; no unique dissatisfaction drivers.

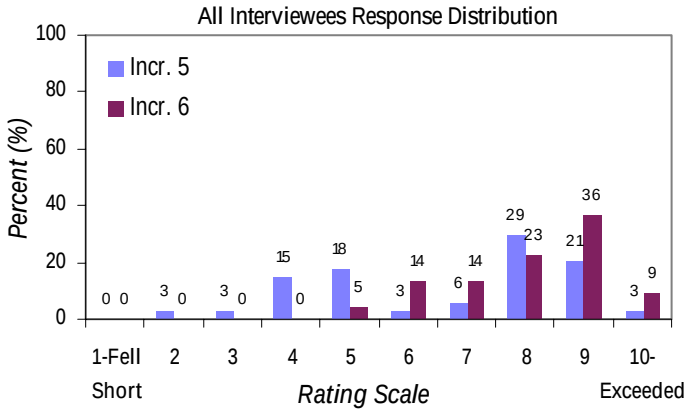
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 11th of 27 (62nd percentile)

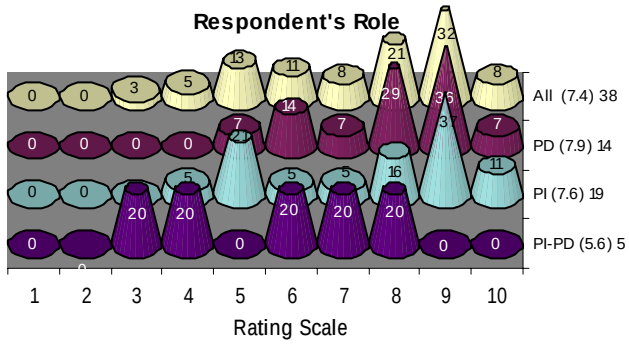
INCREMENT COMPARISON: *Improving*
Comparison Index: +14.4%
Comparison Index Ranking: 5th of 11 Improving areas (60th percentile)

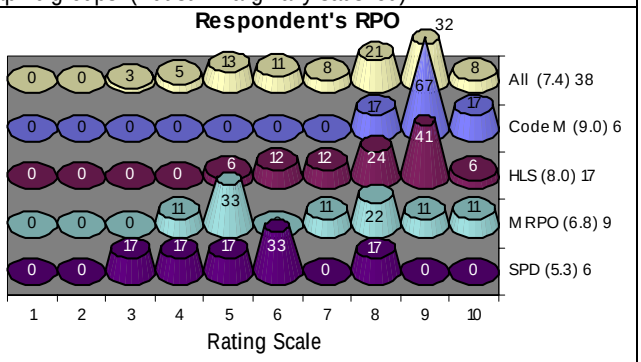
Response Descriptive Statistics

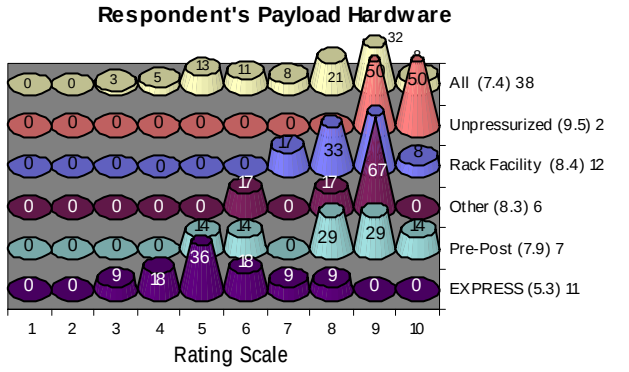
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	22 (100.0%)
Mean score:	6.7	8.0
Scaled mean score:	63.4	77.8
Mean score Δ:	--	1.29
Standard error:	0.37	0.29
T-test:	--	98.4
Chi-square test:	--	99.7
Median score:	8	8
Skewness:	-0.45	-0.60
10th percentile score:	4	6
% dissatisfied:	21%	0%
% satisfied:	59%	82%

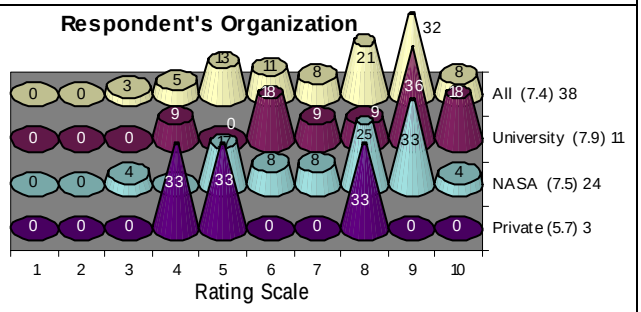


Demographic Trends (Summary): PI-PDs, SPD RPO, EXPRESS Rack Investigations, and respondents from the Private/Commercial sector score notably lower than other demographic groups. (But still marginally satisfied).









Question 1.1.2 – *Comments*

- same as before, not too high or too low due to minimal experience; when you say Program, do you mean interfacing with those in SM as well? [RC: yes, would include SM and others, you're allowed to include colleagues in SM whose feedback you got] {unclear}'

- happy with where we are, just some minor inconveniences

- I would give it a 7, the same as the last question; again I think, given that this is fairly broad level stuff, there are, ahh, and we discussed this last time, there are some parts of system that were sub-optimal and certain parts of the system were very good; of course we got probably Code SS folks, Suzanne's folks, are extremely good and they do an excellent job of hand holding; certain other parts of the program are less user friendly shall we say; I am trying to be sorta fairly generalistic here, in my response to this question

- always, operationally tuned, since where bulk of actions are now; little bit of trouble in good sense of within a week or two before I go'

- experience in the operations area, fairly similar to Shuttle experience, learning curve

- asked for clarification [RC: gave some analogy, going car-shopping]; experience has been good; this experiment was smoothest it could be, no surprises; as of today, been real smooth expeditions [RC: you're taking samples, with Columbia, did you have to do anything Soyuz-wise?] yes, smooth too

- doing what I expected, but not as smoothly; improving but ways to go, flew 3 Increments

- was an off nominal type of situation; I've been to Russia several times, this time considerably different from past; had computers, internet, etc; previously had no phone, and much more limited; thought it would be same, but was entirely better

- we need improvement in expedition crew training, and need more time to train the crew before they go up

- biggest thing here is some things worked really well, other things didn't work at all, averages out in middle

- met most of my expectations, reason for 8, one area in science, fully met my expectations as shown in comment previously; first time experiment put in the ENU, lot of difficulties in getting it approved and requirements kept changing; my expectations were that if we had known what was expected would have been a lot easier

- same as prior question

- great support at all stages

- 100% participation well exceeded our expectations and talked with crew after landing in Russia, very supportive of our experiments'

- for Increment 6, it was closer to being exceeded because we got more crewtime and more runs and more data as a result of MSG being down; our expectations were exceeded

- I am going to put that at 9, just because there is a real effort, even just doing this survey, or the survey process, there is a real effort in the re-organization to try and streamline the payloads process; starting from Increment 1, there has been a lot of improvement in the process, so, getting bugs out, rearranging etc; but definitely met my expectations and went beyond just because they are trying to change rather than hanging on and not changing

- was happy with level of support

Topic Area: Overall Satisfaction – Overall Satisfaction Index
Question 1.1.3 – *How close to your ideal organization for ISS Utilization management would you rate the ISS Utilization Program?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Highest level of improvement of all survey areas, but level of satisfaction remains relatively low. Comments tie organizational size, PIM support to dissatisfaction; no one clear area tied to satisfaction.

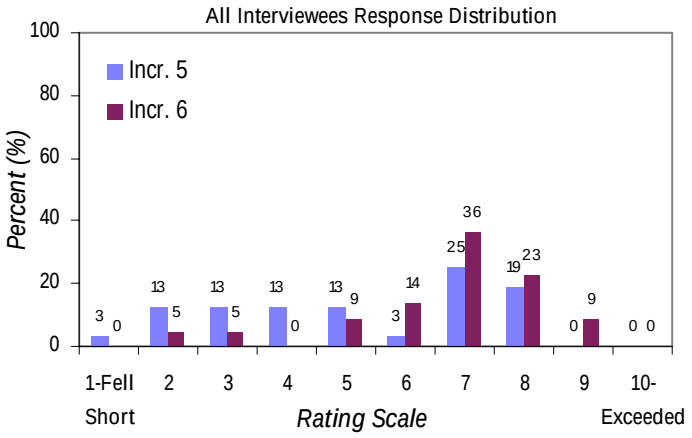
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 24th of 27 (12th percentile)

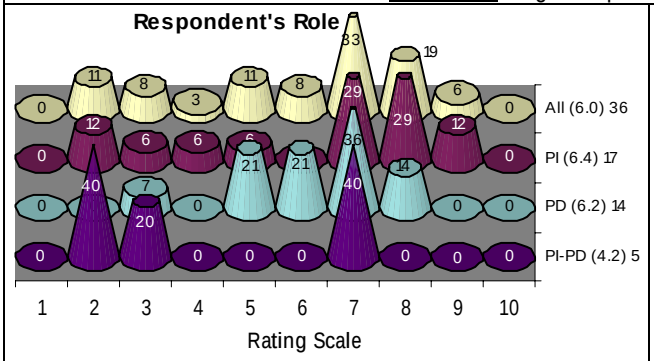
INCREMENT COMPARISON: *Improving*
Comparison Index: +16.3%
Comparison index ranking: 1st of 11 Improving areas (100th percentile)

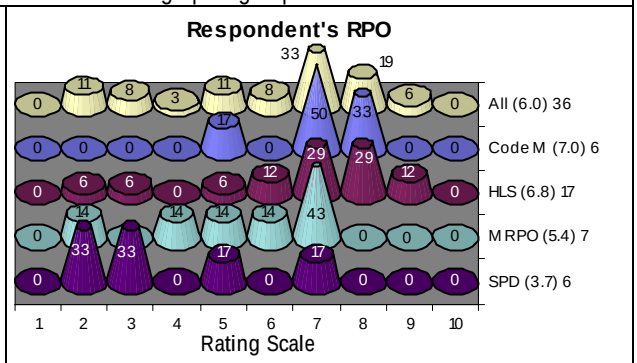
Response Descriptive Statistics

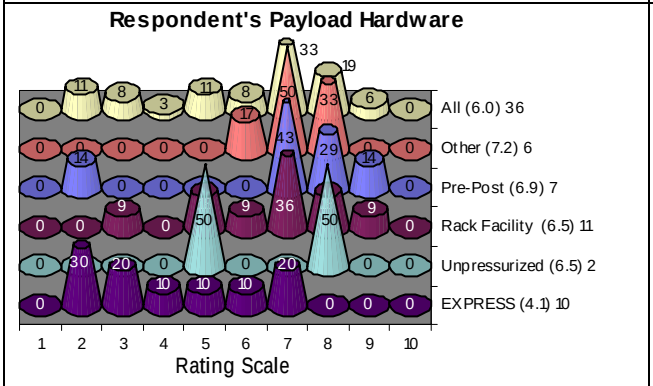
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	32 (94.1%)	22 (100.0%)
Mean score:	5.2	6.7
Scaled mean score:	46.9	63.1
Mean score Δ:	--	1.46
Standard error:	0.40	0.37
T-test:	--	98.7
Chi-square test:	--	96.4
Median score:	5	7
Skewness:	-0.25	-1.28
10th percentile score:	2	5
% dissatisfied:	41%	9%
% satisfied:	44%	68%

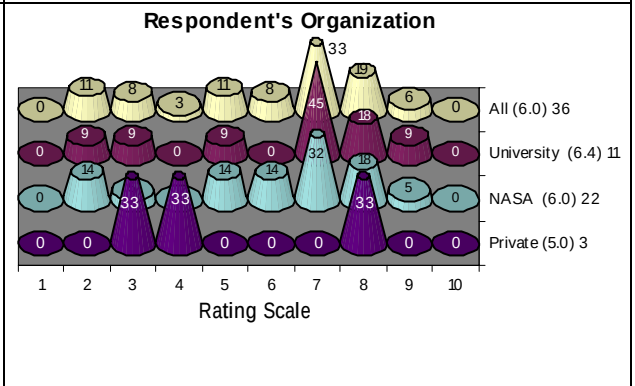


Demographic Trends (Summary): PI-PDs, SPD RPO, EXPRESS Rack Investigations, and respondents from the Private/Commercial sector score in the dissatisfied range compared to other demographic groups.









Question 1.1.3 – *Comments*

- if I heard more positive rumors, I would have rated higher; I can't really quote any of them for you, but remember hearing complaints about dealing with Station program; I personally don't have any

- it's {the ISS Organization} too big; because on Phase 1, we ran all of Phase 1 Payloads with 77 people, all of it, all the Payloads that flew on Phase 1, and we were working with the same type of system. And, I just think the organization has gotten too big, too bogged down and bureaucratic; [RC: too big in what areas? focus on reduction for size?] Suggestion: A combination of the RPWG and PMIT into a single board. That way, you don't have two different meetings to keep up with current events. Maybe if a combination of the two it would cut down on the impact; then there's the Boeing side of the house, where any change that we were thinking about putting through in the system, ending up having to go through a Boeing board, but the change could get pulled before it got through the system on MISSE, and we would have to go through a Boeing board before we went to the PMIT and even before we went to RPWG, so I think that the process is getting a little bit too bureaucratic

- there are at times too many layers and getting the job done

- communication, seems like put data into integration process and then in operations have to re-brief some of the people, not a disconnect, know you are coming, do not know payload as well as should

- we are doing some good things, some tools and information that become available, and communication is not sent down the same, comes through different paths and not timely; nice for communication flow to be streamlined, consistent communication

- no complaints this time

- you need to get people much more familiar with payloads; hand hold PDs and PIs in this bicycle ride

- hard to judge, coming from my lab almost exclusively, hardly any interaction other than Carla Guidry and Human Life Sciences folks; extremely happy with their performance; building digital device for viewing; are very value added folks

- better integration between Lead Increment Scientist and Mission Scientist; more interplay between the two of them; better integration with ESS and PI; had to change what we thought we were going to do and do something better, could be improved

- organization was very good; primarily the interfaces that we had, like Michelle Kamman, and who could get the technical answers for us and certainly during the experiment--excellent

- organization is focused on internal experiments and not as much attention to experiments as ours on the external structure

- long duration of planning stages

- very little work on our end, pretty fluid, went well again in the management approaching getting us into Russia, letters of invitation, paperwork, management took on and made it work

- improvement in providing knowledgeable and experienced PIMs; Human Research Facility PIMS experience was insufficient and needs [improvement]; provide knowledgeable and experienced PIMs, PIM interface for Human Research Facility was inconsistent and not beneficial; if PIM is required, they should have {unclear}

- I work in Human Research Facility, unique as a payload, systems aren't set up to handle that well

- at times, times of communication do not align, people at NASA end are not on same page

- like to see a lot of the process streamlined, know that is happening in Lean Sigma 6

- from an overall NASA point of view, it does not seem all Codes are on board, I know of one for sure; it is not an overall NASA Program, primarily Code U, and that's about it, Codes S, Y missing, Code N just getting in, education just getting in {unclear}

- ISS Utilization is doing a pretty good job, could be better, not disappointed; documentation needs improvement

Topic Area: Overall Satisfaction - Customer Loyalty
Question 1.1.6 – *Assuming it did not change your own odds in competing for ISS research opportunities, how likely are you to recommend to a colleague that they perform research using ISS?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Comments tie "level of pain", time-to-flight as drivers against recommending ISS, a variety of drivers for recommending ISS are noted in comments. Seventy five percent (75%) of those not recommending ISS are from the SPD RPO.

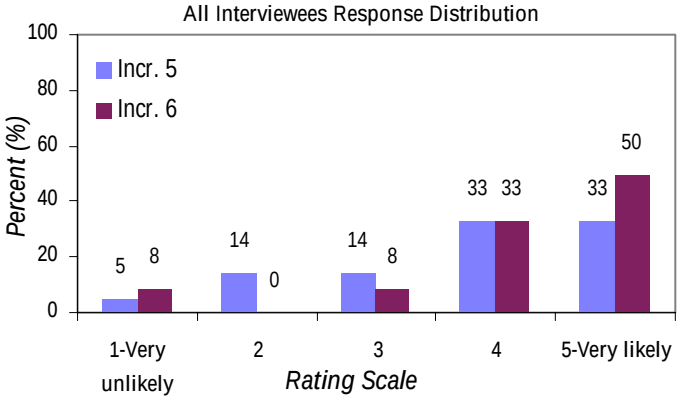
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 8th of 27 (73rd percentile)

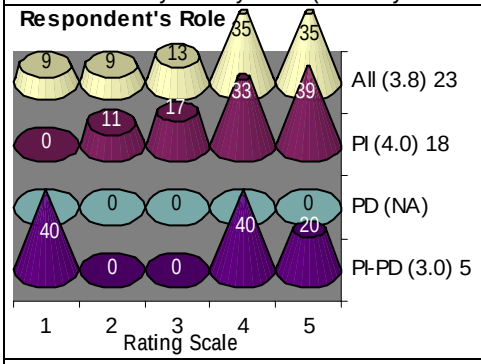
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

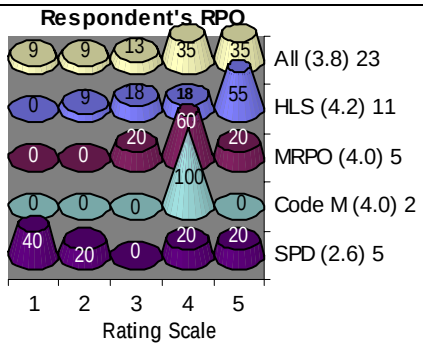
Response Descriptive Statistics

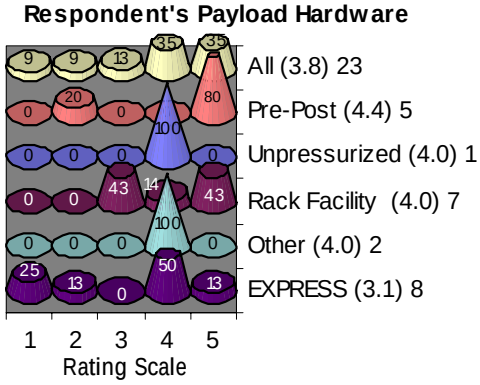
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	21 (61.8%)	12 (54.5%)
Mean score:	3.8	4.2
Scaled mean score:	69.0	79.2
Mean score Δ:	--	0.40
Standard error:	0.27	0.34
Student t test:	--	63.7
Chi-square test:	--	49.6
Median score:	4	4.5
Skewness:	-0.77	-1.92
10th percentile score:	2	3.1
% dissatisfied:	19%	8%
% satisfied:	67%	83%

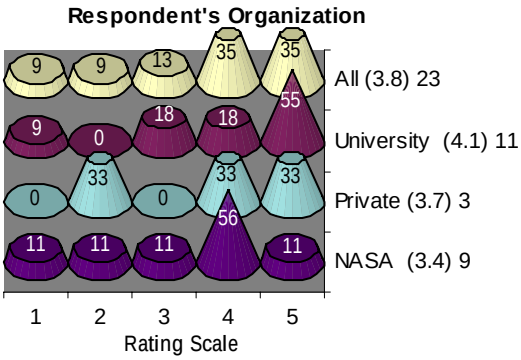


Demographic Trends (Summary): PIs performing a dual role as PI-PDs score lower than PIs alone, especially those from SPD, which score very notably lower (not likely to recommend) than PIs from other RPOs.









Question 1.1.6 – *Comments*

- the pain level is very high and you have got to be prepared for that, that is one of the problems of the Program
- ambiguous question; not another environment to work as this platform; it is not a simple process, and can take a long time, and depending on the research concepts, could take 2-3 years; a great platform to run these microgravity experiments
- caveat is long time from idea to flight
- the amount of effort I put forward to get high quality science for this program is a magnitude of 3, it is troublesome, NSF funded
- always encouraging people to pursue
- since my experiment is an Office of Space Flight activity, it is less of a burden for me to understand the system and since I am NASA it is OK, we need to do a better job of educating the others
- I think if I had someone who wanted to do research on ISS would recommend that they do that
- if passive containers were part of the infrastructure, would be easier for people who have stuff to put in would be easier; have to gather together and do integration of ourselves with our own specimens, have to do this and submit as package
- I have already done so, one thing that we had last October was the working group, and I have already recommended
- if involved animals or delicate parts of experiment, may not recommend; great with pre- or post-flight

Topic Area: Overall Satisfaction - Customer Loyalty
Question 1.1.7 – *Assuming it did not change your own future opportunities for ISS support work, how likely are you to recommend to a colleague that they become a payload developer for ISS?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Significant improvement in rating between Incrs. 5 and 6. Comments identify improvements in program processes and PIM support as satisfaction drivers.

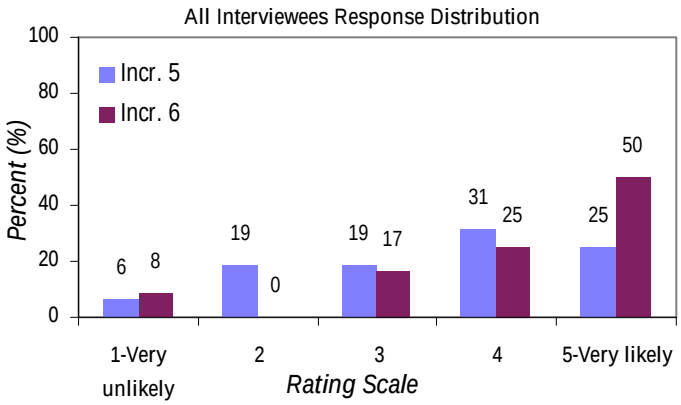
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 12th of 27 (58th percentile)

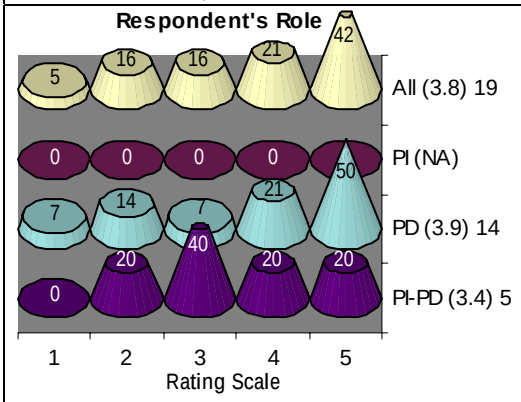
INCREMENT COMPARISON: *Improving*
Comparison Index: +14.6%
Comparison index ranking: 4th of 11 improving areas (70th percentile)

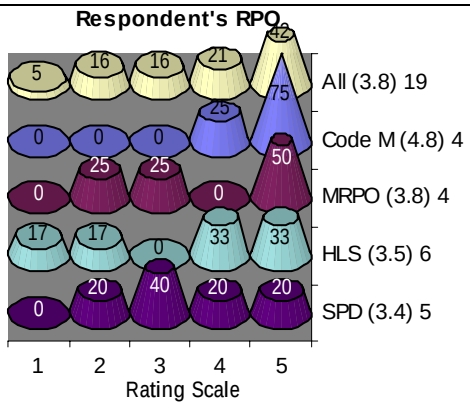
Response Descriptive Statistics

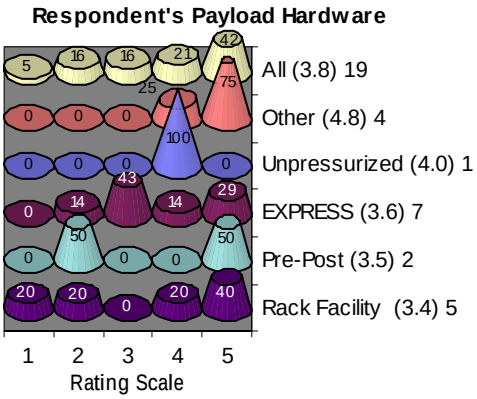
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	16 (47.1%)	12 (54.5%)
Mean score:	4.4	4.8
Scaled mean score:	85.5	95.5
Mean score Δ:	--	0.40
Standard error:	0.18	0.11
T-test:	--	90.2
Chi-square test:	--	56.9
Median score:	5	5
Skewness:	-1.95	-2.91
10th percentile score:	3	4.1
% dissatisfied:	25%	8%
% satisfied:	56%	75%

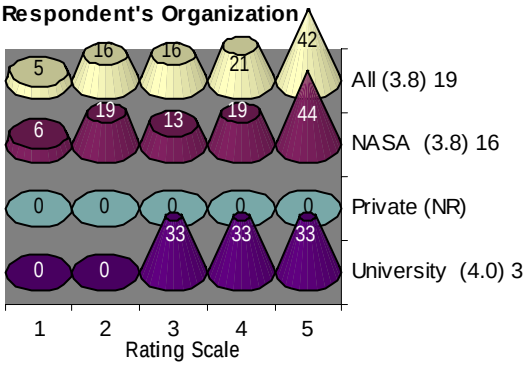


Demographic Trends (Summary): PDs not particularly different from PI-PDs. Only moderate degree of differences between PDs from different RPOs, or associated with different hardware.









Question 1.1.7 – *Comments*

- I'm all for researchers doing research on ISS, but I have one investigator on another experiment (not Renal) who is external to NASA, his team had a lot of difficulties working with NASA and all its requirements compared to other government agencies
- it is no different than working with another set of requirements, but wouldn't go out and actively recruit people
- a very challenging but rewarding position
- a lot of changes that go on over the development of the hardware, makes things kind of difficult
- really exciting work; very demanding from engineering view; documentation is sometimes foolish, doesn't make sense from engineering point of view
- to have opportunity to be involved in research with ISS, a great national resource, why would anyone give up such an opportunity
- still think its one incredible platform to do research on
- just difficult environment to work in, getting better, but pushing against the system, don't get a lot of help, PIMS don't give a lot of help, not sure if it is because Human Research Facility is unique
- the system is getting more streamlined, with PIM assignment there is hope it wont be so overwhelming for PIs and PDs, so I would recommend
- one of our Lockheed engineers was not too long ago hired over as civil service and I did recommend it

Topic Area: Overall Satisfaction - Customer Loyalty
Question 1.1.8 – *Assuming you could get research funding, how likely would you be to choose to pursue another research investigation on ISS?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Ratings and comments consistent with very high level of customer loyalty tied to the "hook being in".

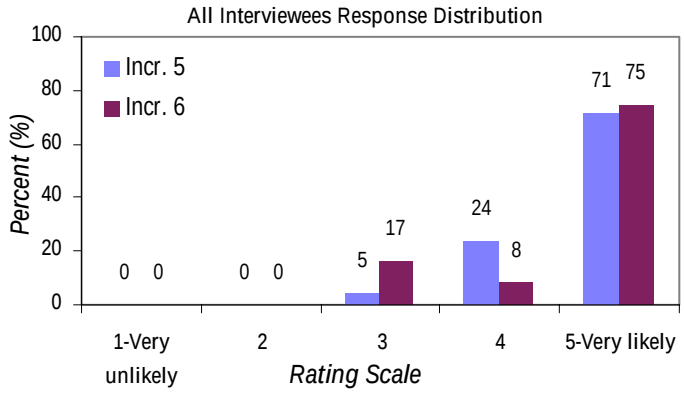
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Very satisfied
Satisfaction Ranking: 2nd of 27 (96th percentile)

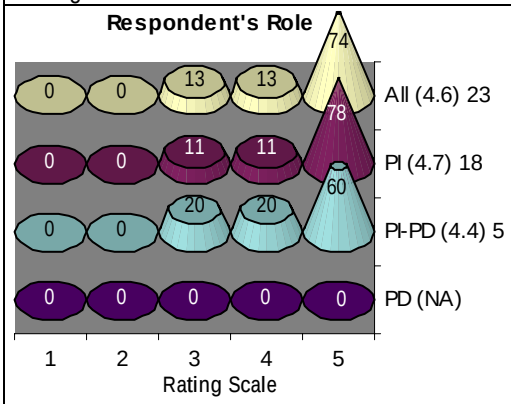
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

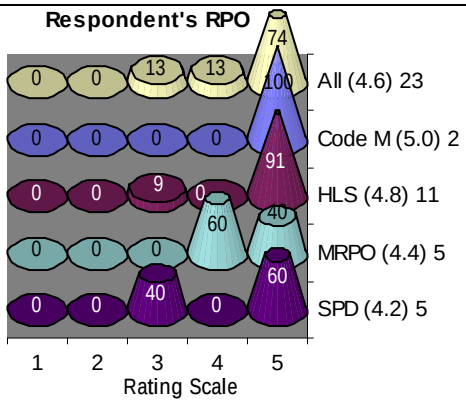
Response Descriptive Statistics

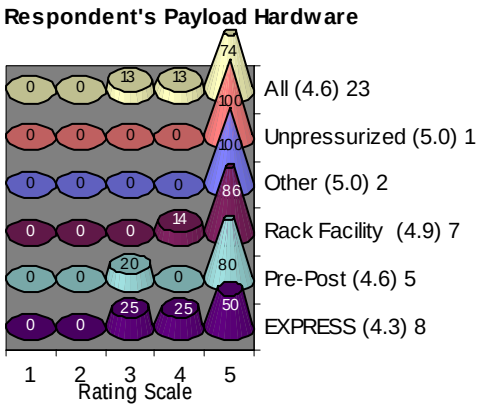
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	21 (61.8%)	12 (54.5%)
Mean score:	4.7	4.6
Scaled mean score:	91.7	89.6
Mean score Δ:	--	-0.08
Standard error:	0.13	0.23
T-test:	--	63.5
Chi-square test:	--	90.9
Median score:	5	5
Skewness:	-1.60	-1.64
10th percentile score:	4	3.1
% dissatisfied:	0%	0%
% satisfied:	95%	83%

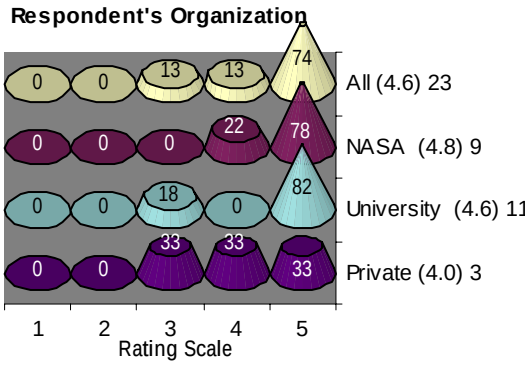


Demographic Trends (Summary): No strong demographic differences. PIs from all groups similarly likely to pursue another investigation.









Question 1.1.8 – *Comments*

- a 5, straight forward, the hook is in…[laughter]
- it does present a great platform for these kind of investigations
- space science, love doing it
- the excessive documentation, changes, requirements seemingly monthly
- came here to do this job in particular; very pleased
- Space Station provides repeat coverage both temporal and spatial recoveries, which compliments and is very distinct to do research
- my circumstances in my career, personal circumstances; will be Department Chair, and have to dedicate oneself to this kind of research
- major area to go, I would certainly go ahead with it
- great opportunity, and a lot we need to do there
- there are now many hypotheses that need to be tested, this has opened up some new areas and need to test these new hypotheses
- we already intend to, and have some unique data and will be asking some further questions, pending renewal

Topic Area: Overall Satisfaction - Customer Loyalty
Question 1.1.9 – *Assuming it was not your only option for work, how likely would you be to choose to develop another payload for ISS, given the opportunity?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: High level of customer loyalty (80% would develop another payload) tied to job satisfaction and other factors related to "enjoying the job".

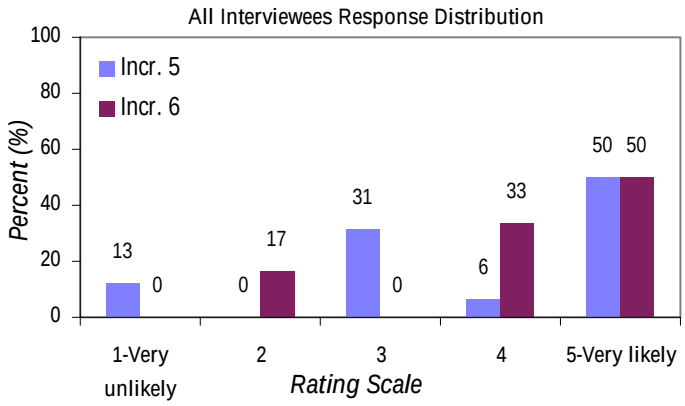
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 7th of 27 (73rd percentile)

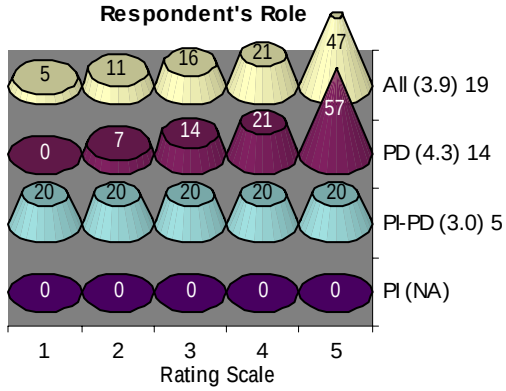
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

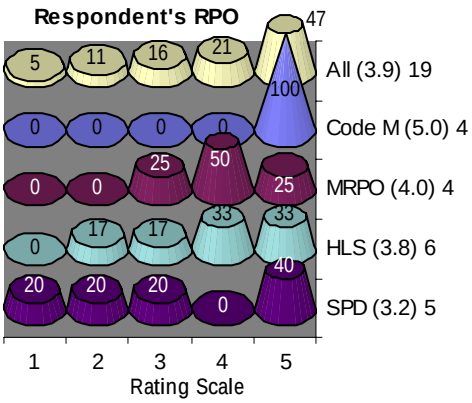
Response Descriptive Statistics

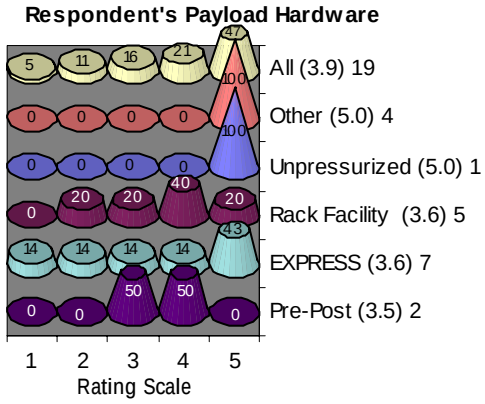
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	16 (47.1%)	12 (54.5%)
Mean score:	3.8	4.2
Scaled mean score:	70.3	79.2
Mean score Δ:	--	0.35
Standard error:	0.36	0.32
T-test:	--	51.7
Chi-square test:	--	100.0
Median score:	4.5	4.5
Skewness:	-0.89	-1.33
10th percentile score:	2	2.2
% dissatisfied:	13%	17%
% satisfied:	56%	83%

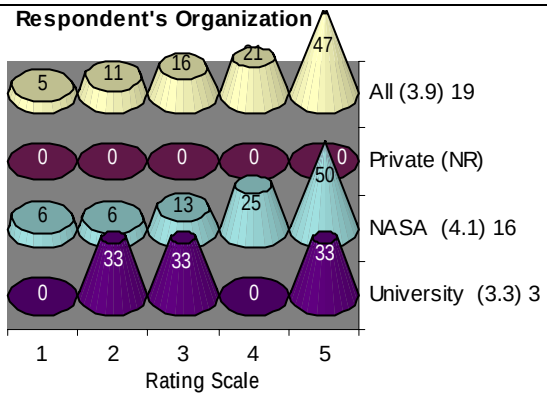


Demographic Trends (Summary): PI-PDs from SPD score notably lower than PDs from other RPOs. PDs supporting Rack Facility, EXPRESS, and Pre-Post investigations are lower as a group from those supporting other types of hardware.









Question 1.1.9 – *Comments*

- I like to see us doing research on ISS; I think it's important and want to do whatever it takes to make it happen
- I like doing this, it was fun, once you get to understand the system, it is a fairly easy system to work in, have to deal with bureaucracy
- I would love it, not locked into a single discipline, have to cross several areas of expertise
- the integration processing headaches can only get better; improving and easier than at first
- that would depend on situation, how long, kind of experiment; very likely if the right conditions
- that's what we do here; like a loaded question, best place to do what we're doing from standpoint of microgravity research
- I like what I do
- the opportunity for getting data from space and the flexibility you can do on ISS is an opportunity that is hard to pass up
- over the years, my half-life on jobs out here has tended to run about 5 years; I've been here for 4 years, get that feeling wondering what else is out there that I haven't done yet

Topic Area: Overall Satisfaction – Research Priorities and Outcomes
Question 1.1.4 – *Please rate how well the ISS Program gave priority to research during the current Increment.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Improvement in mean rating score not statistically significant but several verbal comments note improvement. Fifty/fifty mixture of comments tied to satisfaction and dissatisfaction.

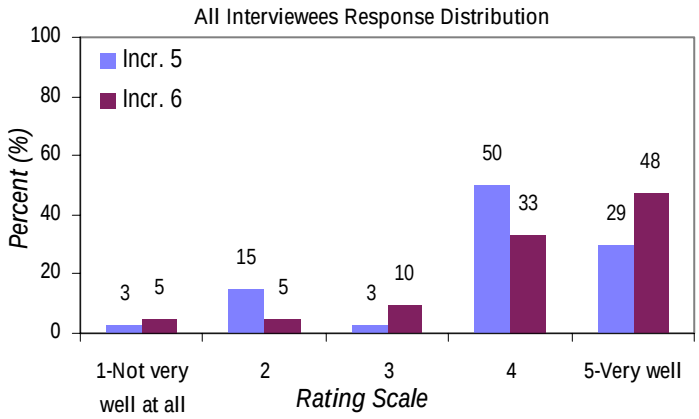
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 10th of 27 (65th percentile)

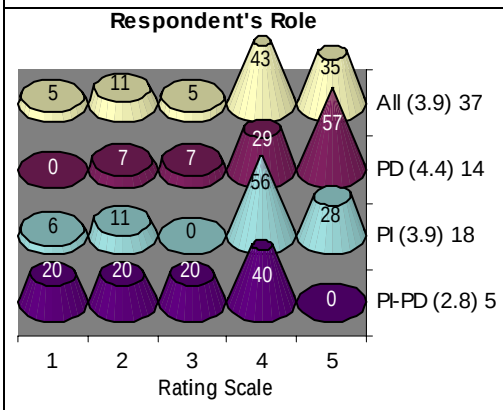
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

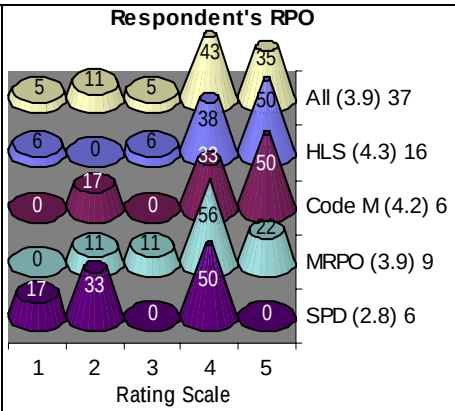
Response Descriptive Statistics

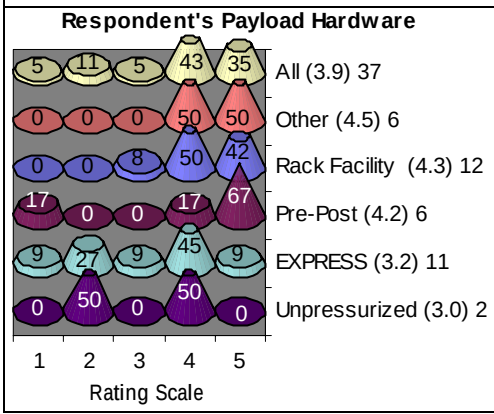
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	21 (95.5%)
Mean score:	3.9	4.1
Scaled mean score:	72.1	78.6
Mean score Δ:	--	0.26
Standard error:	0.19	0.24
T-test:	--	60.3
Chi-square test:	--	91.8
Median score:	4	4
Skewness:	-1.08	-1.53
10th percentile score:	2	3
% dissatisfied:	18%	10%
% satisfied:	79%	81%

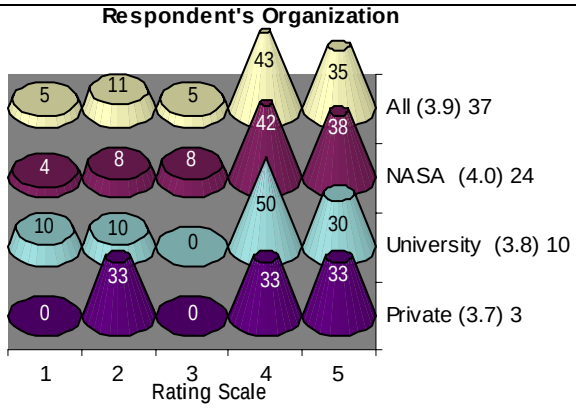


Demographic Trends (Summary): PI-PDs associated with SPD score notably lower than other groups.









Question 1.1.4 – *Comments*

- given job I do, would like to see Program give higher priority to Research experiments
- there's a lot of research that can be supported that is not because Program won't go out of way in place they should; any areas getting away from non-standard interfaces; MISSE is attached to handrail; when we try to do something, have to go through 5
- I would give it a 4; this is a question that has improved over the Increments 3, 4, 5, 6 and I would not have answered this question the same way for Increment 3
- they went way above and beyond to make things work
- again, understanding that we are in the build-up phase, we were asked by, ahhh, through the science tag-up meetings and through contract numbers and everything like numerous questions about items of specific items like…restoration of the M-core, the (unclear) recorder; we kept getting asked the question until we modified our answer, to the point to where they kinda got the answer that they were looking for sometimes; again, on the M-Core; if we were asked once, we were asked 20 times, you know, what's the impact if the M-Core goes down? And we said, well, the impact is that we lose data. And we think that was kinda promised in the program and when we went offline, and it wasn't fixed, it was an impact to gathering up the acceleration data and the characterization of the firemat and such; and you know in describing this repeat questioning, it's like you know, it was like being asked the question 'Can you live with your legs being cut off?' You'd say, 'Well, sure' but you say but 'Is this the way I'd rather live my life"; and well, you say, 'Of course not' and this is the same kind of thing. It is like, well, "Can you live without M-core? Well, of course, we can operate and will take whatever data we can get in the AOS windows, but that certainly isn't how we thought that these things would go; [RC asks a question and there is more information on the tape]; compacted. We were impacted and was not fixed; M-Core availability was an issue, replaced in Increment 5, no longer technical issue, just not pleased with how handled; lost opportunity for information that may have been important down the road
- science is never top priority; crew, orbiter, safety is always top priority
- becomes very obvious during real time ops that we are very low on the priority list; other elements take priority; very discouraging to do things we want to do because there seems to be no interest
- we got all the data we asked for, from my perspective
- since we are an MSG, and all the problems with MSG up front, Don Pettit getting it up and running up; kind of squeezed into a box with high priority
- did a pretty good job there; definitely started concentrating on research aspect of everything, with Science Officer and everything going on there
- since post-flight was in Russia, from our perspective it went very well, exceptionally well with post-flight in Russia, that transition went very smoothly
- we certainly had good priority and had good opportunities to go beyond the plan
- there has been no direct impact on our experimentation; ISS at this stage of the game is not focused on research, understandable
- more science than I expected, because mission was extended; this rating reflects my own experiment'
- overall pretty good priority and met with other researchers in Russia, post-flight time point that we meet with others about 6 months later and overall we got a bonus in Russia
- Microgravity Sciences Glovebox down helped us a lot
- wanted it one notch up from last interview
- my project well supported
- all objectives got met, other than things that got broke
- from CEO perspective, Don and Ken and Russian rep just outdid themselves and went way beyond for CEO and anything we expected; ISS Program supported that and didn't squelch that and was supportive
- did very good job of prioritizing research

Topic Area: Overall Satisfaction – Research Priorities and Outcomes
Question 1.1.5 – *Please rate the extent to which the amount of raw data collected by your ISS Investigation during this Increment was worth your participation in the ISS Program.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Increment 6 level of satisfaction is the highest of all topics surveyed. Comments tie high level of satisfaction to crew efforts, amount of data meeting expectations, and post-flight support in Russia.

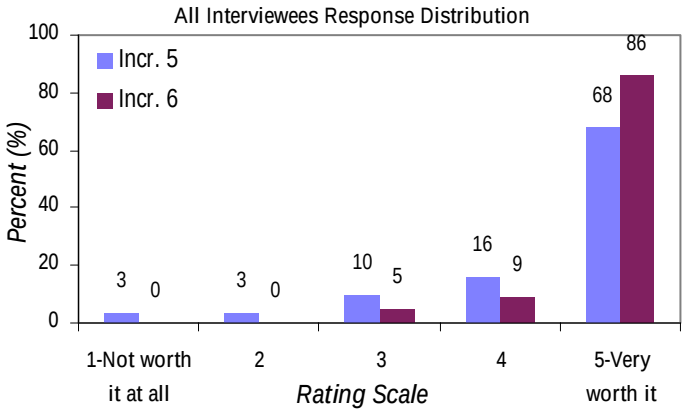
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Very satisfied
Satisfaction Ranking: 1st of 27 (100th percentile)

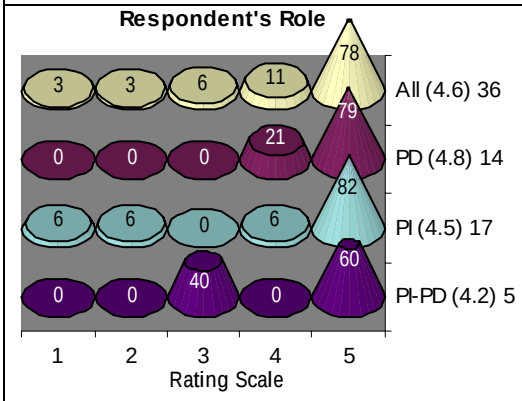
INCREMENT COMPARISON: *Improving*
Comparison Index: +10.0%
Comparison index ranking: 10th of 11 improving areas (10th percentile)

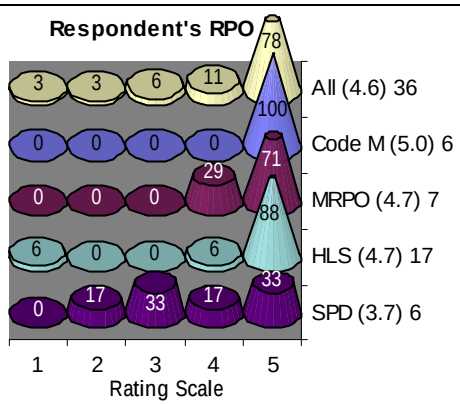
Response Descriptive Statistics

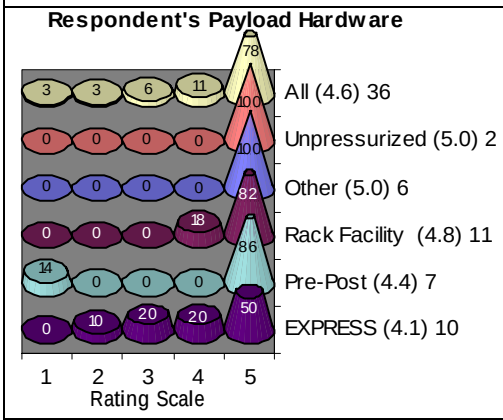
	Incr. 5	Incr. 6
No. respondents:	33	22
Applicable responses:	31 (93.9%)	22 (100.0%)
Mean score:	4.4	4.8
Scaled mean score:	85.5	95.5
Mean score Δ:	--	0.40
Standard error:	0.18	0.11
T-test:	--	90.2
Chi-square test:	--	56.9
Median score:	5	5
Skewness:	-1.95	-2.91
10th percentile score:	3	4.1
% dissatisfied:	6%	0%
% satisfied:	84%	95%

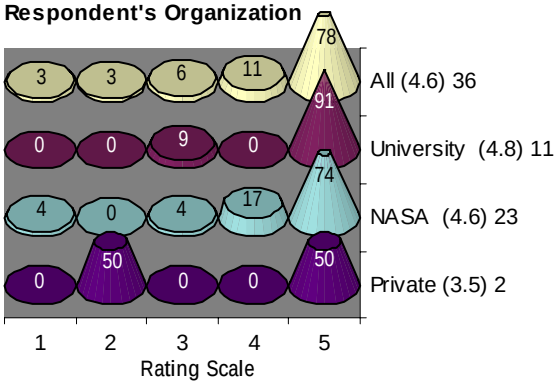


Demographic Trends (Summary): Respondents from SPD notably lower than other groups, otherwise no strong differences are evident.









Question 1.1.5 – *Comments*

- high rating because we had to go to Soyuz launch after accident; Renal was in jeopardy with getting all samples back and indeed we did get all samples back, it was imperative we got them back and program worked to make sure we got them
- getting data we can't get anywhere else; if I had to do again with same stuff, would do it again
- what we are doing is worthwhile; very positive
- we were able to set up three times, were able to conduct an extra operation, any data we get in education arena are very much appreciated
- important to collect information for the building of the database; keep systems powered up and running as much as possible
- crew was excellent; they took the science seriously and did a really good job
- we're still getting our samples back, so this is a tough one; lost a lot of our data, but not Program's fault
- see comments from previous question; crew return from Expedition 6, came on R+1 as scheduled
- got a lot of it (raw data collection)
- the amount of data we are receiving is very satisfying
- we've got good data, been able to characterize the environment; during Increment 6 was able to move sensor around and get things done; when CVIS (???) look at environment closer, we were able to do our jobs, basically {unclear}
- we got all the data we expected
- see previous comments on science results, Increment 6 got better data
- very worthwhile; have not gotten the bulk of our data, have some photographs, and from experience will be valuable
- got more data than expected and new data that have not been collected before
- we have gotten some really unique results and this will not only benefit NASA and will be published and valuable in Immunobiology
- got everything we wanted
- I can’t describe how great my data are; paper is done, will submit
- learned some very interesting things very quickly
- again, for the data we received, we are still plodding through, we were very pleased
- we got everything we were looking for, both my PIs were very happy with the data they got

Topic Area: Overall Satisfaction – Program Improvements
Question 1.1.10 – *How would you compare your experience with the ISS Utilization program for the current increment to your experience on previous Increments?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Ratings and comments strongly support concept that Program improved between Increments prior to Incrs. 5 and 6, and also similarly improved between Incr. 5 and 6.

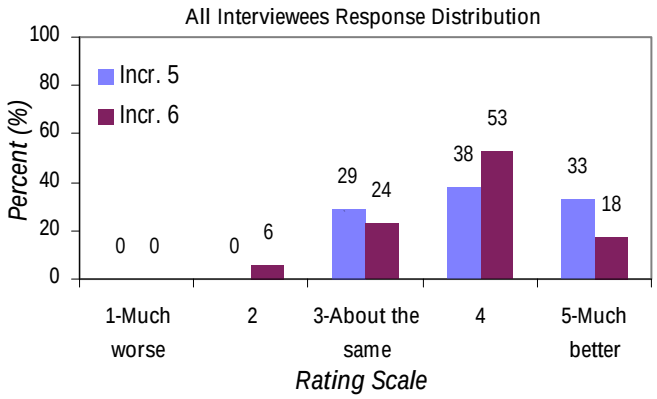
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Not applicable
Satisfaction Ranking: Not applicable

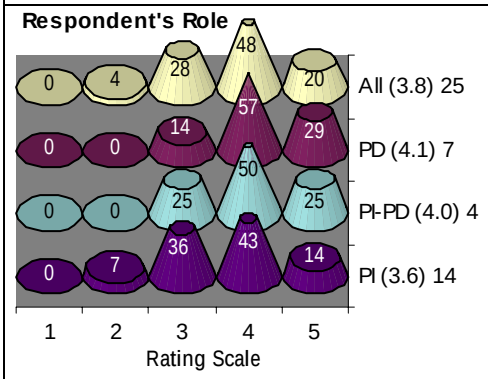
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

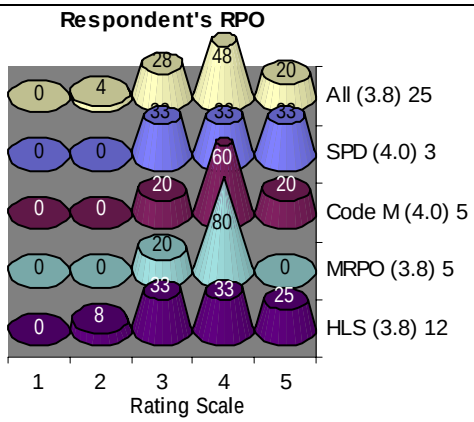
Response Descriptive Statistics

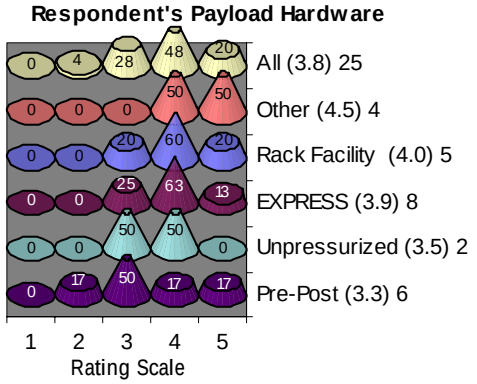
	Incr. 5	Incr. 6
No. respondents:	23	19
Applicable responses:	21 (91.3%)	17 (89.5%)
Mean score:	4.0	3.8
Scaled mean score:	76.2	70.6
Mean score Δ:	--	-0.22
Standard error:	0.18	0.20
T-test:	--	60.0
Chi-square test:	--	69.7
Median score:	4	4
Skewness:	-0.09	-0.45
10th percentile score:	3	3
% worse:	0%	6%
% better:	71%	71%

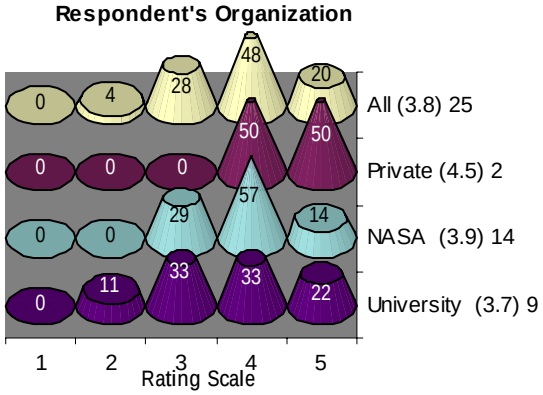


Demographic Trends (Summary): No notable demographic differences.









Question 1.1.10 – *Comments*

- constantly improving process, getting better and better
- made it better, steady improvement with each Increment; received today the card with the customer service line, an improvement overall
- noticeable improvement in Payloads Office and the support from OZ
- I had it as a 4, better; I don't know if I would say much better, but we are heading in the right direction anyway; [RC: can you bring to mind any aspects that are getting better; particular aspects that are getting better?] Well the H-Core is big example, ahh, you know it was a, ahhhh, just something about where we were at in flow that the H-core wasn't ready so they designed it and got this M-core up there which did a decent job, but the priority to get it fixed when it went offline was lower and that is what made it problematic; the other thing is a box, not really a box, but a system that they have down at Marshall that they brought on back in last September actually called the DSM, which is a data storage manager, which is a system that stores last two years of info from science; can make request and get play back, that has been a great help, one instance were offline for extended period of time, several hours
- Increment 6 was as good as 5 and 4, and a lot better than 3; Increments 5 & 6 were comparable because crew was fired up to do the science
- previously collecting at KSC, now Star City; things were quite good despite obstacles present; tough to answer, not comparing apples to apples; happy with data we received compared to that on Increment 5
- process is evolved and maturing so is getting better
- certain processes have been wrung out a bit, more of a familiarity and having processes being defined; early on, no processes defined, even if they broke, once it is defined, can tweak and make broken ones workable; next step is streamline the process
- ah, I thought that it was a little better, so I put a 4; and the reason was the problems that we had, in earlier conversation, with my ESS and the Increment Scientist, and also the interaction between Med Ops and us was better; and, also, I thought that considering that we did it on the day that the Russians were on was very good; I thought it was better than a 5 and I think it was partly because we were more experienced too
- operationally the same, science results better
- we got the data, obviously much more involved in getting data in Russia; unavoidable, but had to put in new budgets and new schedules; was more hassle to this in Russia than in Florida
- didn't have enough experience on 6 to comment, impression is that it is getting better
- only problem with Increment 6, not anyone in ISS fault, tragedy of Columbia made measurements hard to get back; I was really impressed with people getting together and doing contingency planning; did not want to go to Russia; they listened to my scientific considerations; impressed with way organization responded
- ya know, I will put a 4 on that one; it was definitely better, things are improving as far as the understanding of the POD and how things work and what not to worry about and what to worry about, as far as the operational side of house; I really can't say much about the forward part because we've been on there since Increment 1, not a lot has changed of any paperwork, so, the IURC sort of remains the same; but the IURC staff at Marshall have been great at working with us on that (unintelligible...) {unclear}
- not much has changed, experience good in both cases

Topic Area: Program Processes – Ease of Doing Business
Question 1.2.1 – *Please rate your level of satisfaction with the overall ease of doing business with the ISS Utilization Program.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Notable improvement in ease of doing business between Incrs. 5 and 6 based on quantitative ratings, but comments are decidedly mixed, with a variety of positive and negative factors driving both satisfaction as well as dissatisfaction.

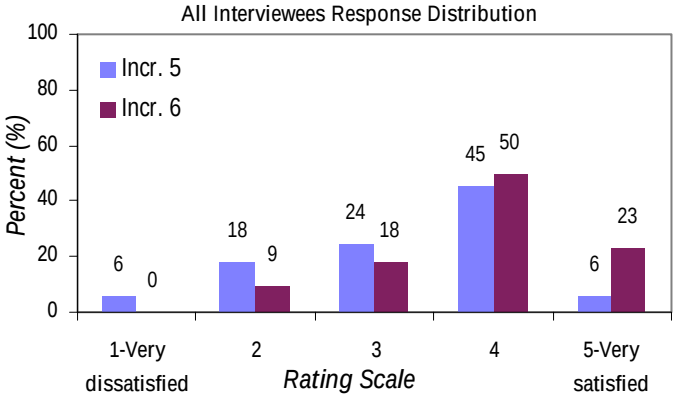
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 19th of 27 (31st percentile)

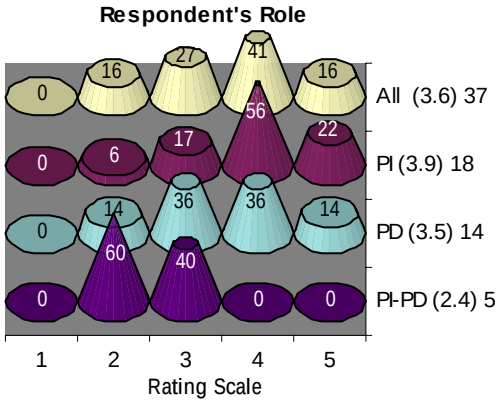
INCREMENT COMPARISON: *Improving*
Comparison Index: +14.8%
Comparison index ranking: 3rd of 11 improving areas (80th percentile)

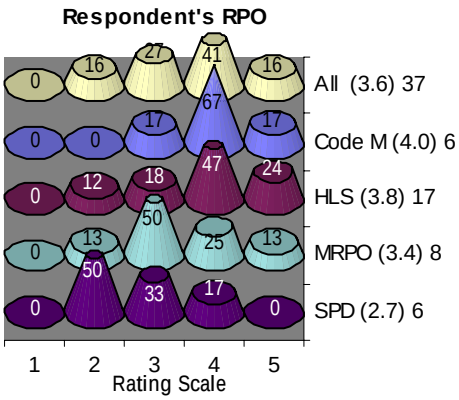
Response Descriptive Statistics

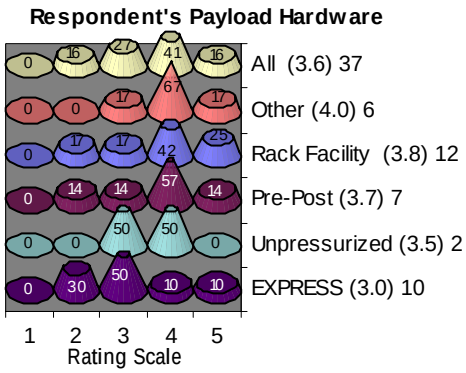
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	33 (97.1%)	22 (100.0%)
Mean score:	3.3	3.9
Scaled mean score:	56.8	71.6
Mean score Δ:	--	0.59
Standard error:	0.18	0.19
T-test:	--	96.7
Chi-square test:	--	98.8
Median score:	4	4
Skewness:	-0.59	-0.61
10th percentile score:	2	3
% dissatisfied:	24%	9%
% satisfied:	52%	73%

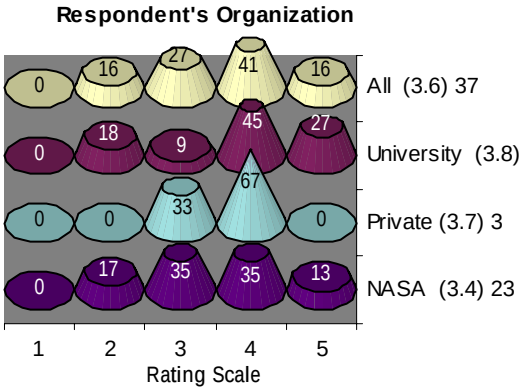


Demographic Trends (Summary): PI-PDs from SPD in dissatisfied range, notably lower than other groups.









Question 1.2.1 – *Comments*

- based on feedback from others, not particularly mine, when balancing it all out, feedback from others has been a bit negative
- some days difficult some days easy, bureaucracies are that way
- the Human Research Facility folks essentially single point of contact for a lot of things; as user, a very useful process
- the PIM is excellent, again based on what I was used to in Shuttle; PIM is single point of contact and that they agree the ones who take care of you; ISS PIM is doing what Shuttle PIM did
- instances where things are positive and overall some negatives; communication is issue, development of tools, everybody has timelines, all the firewall protection that is erected, but what gets lost in time is, i.e., JEDI(?) page, wasn't even aware sight was out there and had to negotiate to get through our own firewall; tools are great, but problem is still happening, does not do much good to have tool if not easily accessible to PDs/PIs, universities etc; products are coming out to get through firewalls, spend a lot of time on this and finally get it all worked out, but as a PI/PD don't think that I should have to worry about this; should be able to utilize tool and not always the case
- didn't do a lot of direct business with anyone; got on mission, all objectives were met, still waiting for all of flight data, science met
- improving but grading across all Increments, has been a pain in the a**
- not easy doing business with the complexity of the Program; inherently complicated
- interfaces with the program were done up front, so may not be full encompassing; from perspective of lot of support coming from MSG program
- Helen's a harder grader than I, she gave 5, its not great but showing improvement but showing fracture and disjointed; the way the different areas, labels, manifesting, for example, they're like their own little buildings with tunnels and little air
- no problem, could be even smoother
- same comments as first question, hardware fantastic and getting there was difficult; factoring in results therefore the rating
- much of this was transparent to me because of my ESS, and Human Life Sciences took care of me, great support
- pretty straightforward; for us, has gone as well as could be
- provide a PIM that can do job required and provide reliable and consistent methods for providing required data to the program; decide to either use PDL the way it was intended or eliminate the requirement for PDs to enter data into it
- only issues, is that sometimes, feel like I am forced to have multiple conversations in parallel; organization is hyper-responsive and happier with that than no call back
- part of my problem with not giving any higher rating; I do not understand the role of my PIM; I just feel like the roles and responsibilities have evolved and are not fully understood
- the positive part is that the PIM assigned is taking more responsibility in trying to coordinate part from PDs, but still several parties PD ends up talking to stowage, safety, ground systems; not sure it is necessary all these people talking to PIM, but may be way to streamline from PD perspective
- pretty satisfied

Topic Area: Program Processes – Ease of Doing Business
Question 1.2.2 – *What is your opinion of the number of personal contacts you interacted with in order to accomplish your ISS project?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Responses and comments indicate a significant percentage (68%) of Incr. 6 interviewees consider the number of personal contact to be "just right," with all remaining respondents falling on the side of too many contacts.

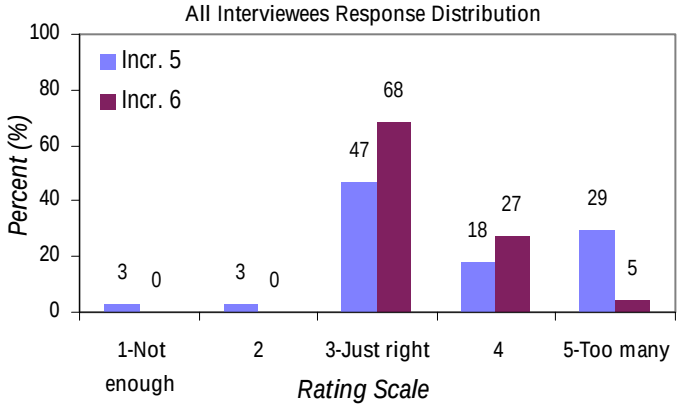
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: N/A
Satisfaction Ranking: N/A

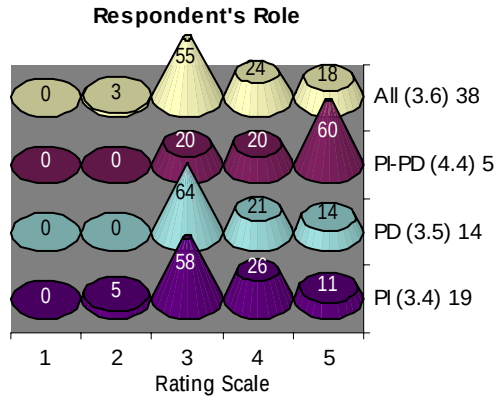
INCREMENT COMPARISON: *Improving*
Comparison Index: -7.8%
Comparison index ranking: Not ranked

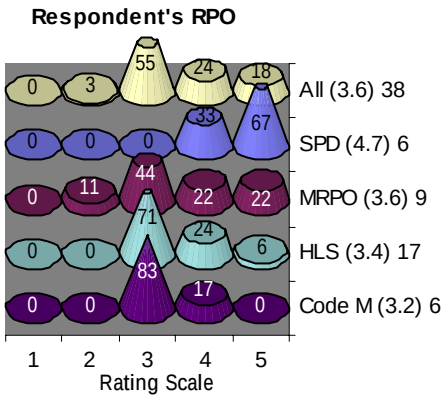
Response Descriptive Statistics

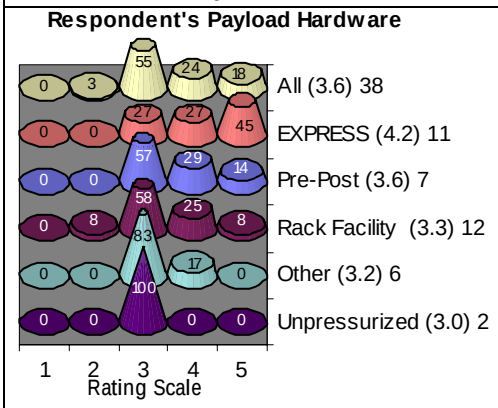
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	22 (100.0%)
Mean score:	3.7	3.4
Scaled mean score:	66.9	59.1
Mean score Δ:	--	-0.31
Standard error:	0.18	0.12
T-test:	--	79.7
Chi-square test:	--	94.3
Median score:	3	3
Skewness:	-0.16	1.39
10th percentile score:	3	3
% dissatisfied:	6%	0%
% satisfied:	47%	32%

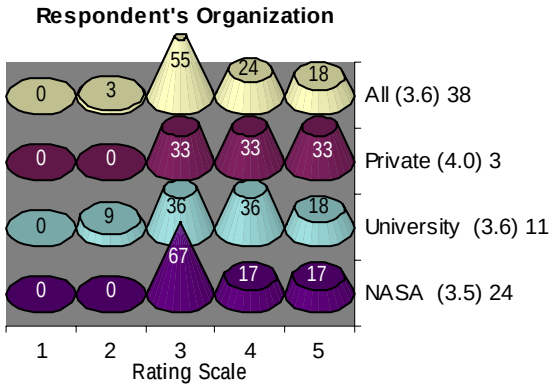


Demographic Trends (Summary): PI-PDs, SPD and EXPRESS respondents score notably higher (more contacts) than other groups.









Question 1.2.2 – *Comments*

- perfect with the way we are working externals, work them through PIM, have single point of contact through PIM; all you do is talk to one person, info gets disseminated from one place, we can track how it got there and stop it if necessary

- if anything it would be a 4, bordering on the too many, and then sort of folds back into the answer of the previous question I think it's 3, but the time sort of having, I guess maybe you want your own personal shopper or something, sounds like a prima dona, but sort of a 3 to a 4, I'd give it a 4

- do not have to talk to too many people

- communication, hard to find who is right contact, but then when found, it was just right

- if I had questions, I knew to whom and how to go

- very often we can't get an answer from original source we were told we could get answers from; we chase down ladder to get answers, usually about 4 people

- other CEO as PI, the CEO has been operating on several Increments, good network of contacts

- I'm going against Helen's grading a bit here, she gave about right amount of contacts; I believe too much effort thrown down on project to make all the contacts, I believe we need them, but not as many; you want to call others if needed, but would {unclear}

- less double contacts this time around, still some could improve with little better organization with fewer requests

- one prime contact, Michelle Kamman, and two other people, and they found other contacts on an as needed basis; during hardware development it required a lot more effort, after that things were smooth; through all Increments we had a Friday morning telecon

- all the people are essential

- through our prior experience, sort of new what groups we would be dealing with, already biased in that we already know what groups to go to and what to do

- communications

- I don't mind talking to all the individuals, as a NASA insider, I like to know what's happening; if I was an outsider, not sure if I'd want to be bothered by so many people, prefer to have a PIM with better understanding of how ground links work, etc

- was just about right

Topic Area: Program Processes – Payload Data Library
Question 1.2.3 – Please rate your level of satisfaction with your direct use of the Payload Data Library (PDL).

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Uniformly negative rating scores show no statistically significant change between Incrs. 5 and 6. (Statistics affected by low response rate due to lack of PI and some PD direct experience with PDL .) Comments negative but unspecific as to suggested improvements.

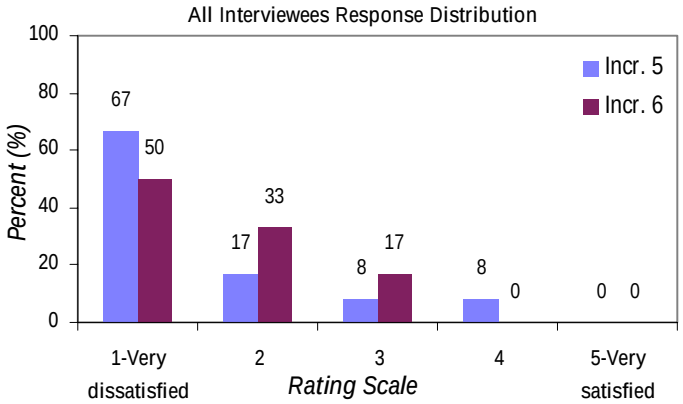
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Red
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Dissatisfied
Satisfaction Ranking: 27th of 27 (0th percentile)

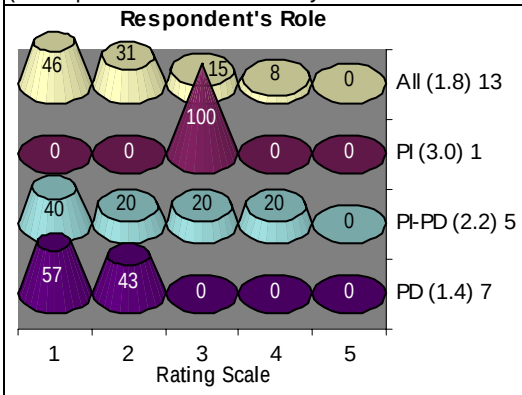
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

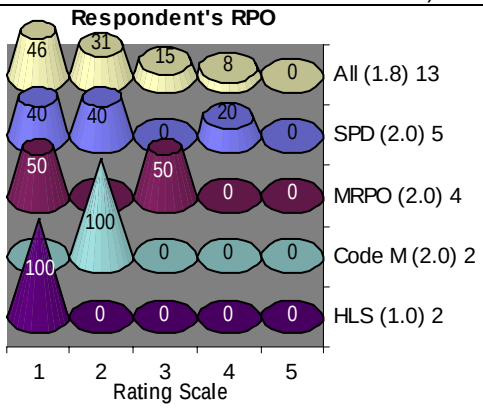
Response Descriptive Statistics

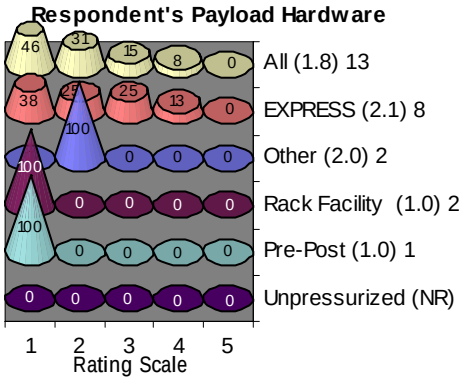
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	12 (35.3%)	6 (27.3%)
Mean score:	1.6	1.7
Scaled mean score:	14.6	16.7
Mean score Δ:	--	0.08
Standard error:	0.29	0.33
T-test:	--	13.8
Chi-square test:	--	47.8
Median score:	1	1.5
Skewness:	1.71	0.86
10th percentile score:	1	1
% dissatisfied:	83%	83%
% satisfied:	8%	0%

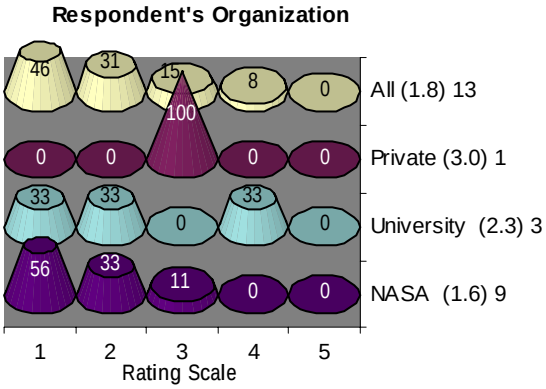


Demographic Trends (Summary): No demographic comparisons supported due to overall low response rates for this question. (PIs in particular stated that they were too insulated from PDL or unfamiliar with it to have a basis for feedback.)









Question 1.2.3 – *Comments*

- bulky and difficult at best
- use has been re-promoting information from Increment to Increment from MAMS to PDL; don’t change anything, re-promote information, so we are good to go; it seems kind of silly that we have to re-do for each Increment; we are going to stay up there; why not ask some questions up front and then be smart enough to not repeat information that was acquired up front
- seem to have all sorts of problems, data loss
- MSG did all the PDL inputs
- made sure I got Helen's, probably not an unusual reading for PDL.; some of the improvements are just band-aids on a very bad system; they've got a long way to go; Helen went ???; remains cumbersome, doesn't take advantage of end user structure; PDs {unclear}
- he does not know what this is
- contractors used, not myself directly
- never touched
- my PDL hasn't worked ever; so, but to be honest, I would talk to folks and they put it in for me, and I never bothered to fix, it is very cumbersome; and it, for some reason it just never worked on my computer; so I guess for the PDL I will put a 2, because the concept is good, it is nice to be able to get in there and put your data in, but there are still a lot of quirks in it
- never used the PDL

Topic Area: Program Processes – Payload Data Library
Question 1.2.4 – *Please rate your level of satisfaction with how effectively the data in the Payload Data Library (PDL) are used by the ISS Utilization Program.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Uniformly negative rating scores show no statistically significant change between Incrs. 5 and 6. (Statistics affected by low response rate due to lack of PI and some PD direct experience with PDL .) Comments negative but few specific suggestions.

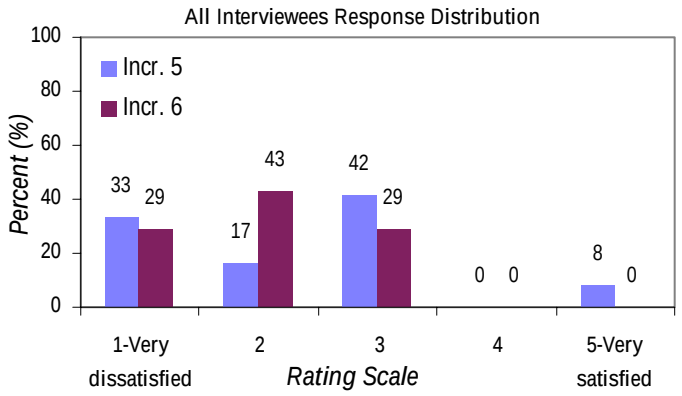
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Red
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Dissatisfied
Satisfaction Ranking: 26th of 27 (4th percentile)

INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

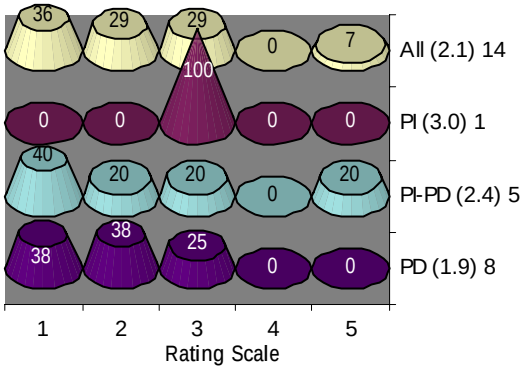
Response Descriptive Statistics

	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	12 (35.3%)	7 (31.8%)
Mean score:	2.3	2.0
Scaled mean score:	33.3	25.0
Mean score Δ:	--	-0.33
Standard error:	0.36	0.31
T-test:	--	46.7
Chi-square test:	--	71.6
Median score:	2.5	2
Skewness:	0.64	0.00
10th percentile score:	1	1
% dissatisfied:	50%	71%
% satisfied:	8%	0%

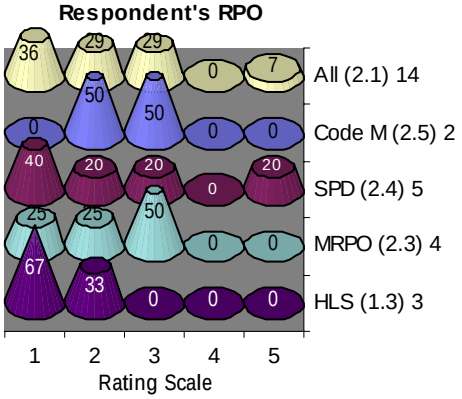


Demographic Trends (Summary): No demographic comparisons supported due to overall low response rates for this question. (PIs in particular stated that they were too insulated from PDL or unfamiliar with it to have a basis for feedback.)

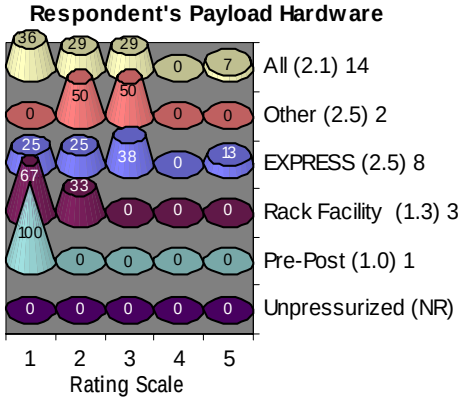
Respondent's Role



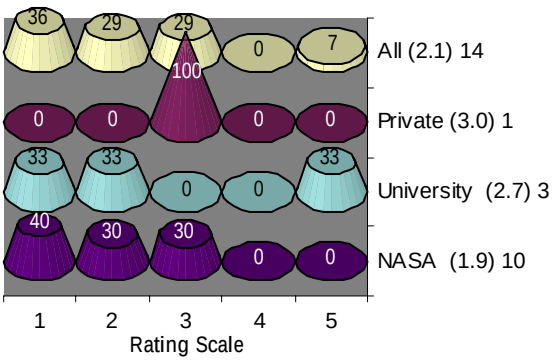
Respondent's RPO



Respondent's Payload Hardware



Respondent's Organization



Question 1.2.4 – *Comments*

- through PDL process, no longer have to sweat and toil to get into it; to get a full level of understanding, won't happen until ULF-1 flies; that is when Program will use the data; integration is done, won't get feedback until closer to launch or shortly thereafter

- command and data handling information was used quite well, basis for our commands and telemetry to be put in PDL, database no issues, worked real well; inputs for MAMS, Station folks are not using

- my experience is that it is not used at all; when we went to pack our equipment...MSFC didn't seem to use any of our uploaded data

- from project standpoint, we're unclear where some of data is supposed to go; we get a lot of change requests to review, IDRD tables, we've asked for clarification on what they mean by units, etc, but they don't even know what units are supposed to be with what {unclear}

- does not know what this is

- do not require PDs to enter data into PDL and require data in separate spreadsheet, since user does not like PDL; we still have to do inputs in PDL, but we maintain manifest separately, inputting data in multiple places, fine if PDL doesn't work right

- if you had a 0, I'd put that; nobody seems to know data are there, have to point out, have to submit multiple times

- I only know of two of the sections that are, were in my case, were actually used, again that may be ignorance on my part, I guess I will put a 2, because I would get calls, the ground systems used the data and training used the data, all the others things don't seem to get looked at; they may, but I am just ignorant on who uses them, so, I will put a 2 there, because it seems like I would get questions from some folks, about how much a TV weighs, or what are the camera situations, when it was all in the PDL and so I will put a 2 and with the comment that those 2 sections were used definitely and not sure that the others were ever looked at

Topic Area: Program Processes – Payload Integration
Question 1.2.5 – *Please rate your level of satisfaction with the ISS end-to-end payload integration process.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Ratings score solidly in satisfied range with very similar score distributions for Incrs. 5 and 6 (i.e., clearly no change). Comments indicate some customers remain confused about the steps in the ISS integration template, even after taking their payload through it.

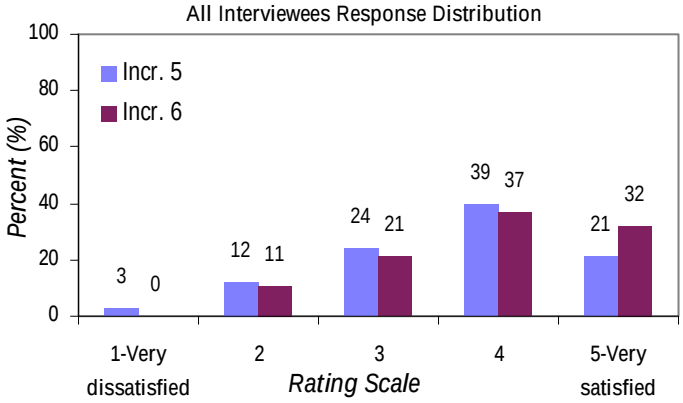
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 18th of 27 (35th percentile)

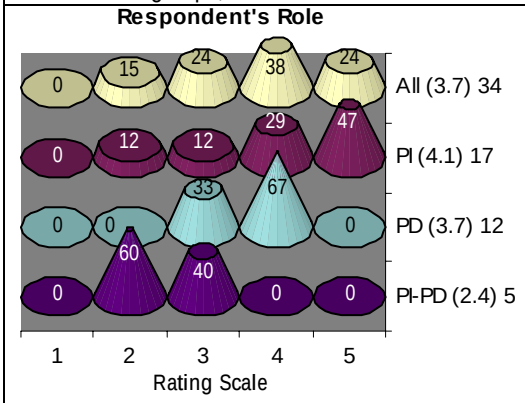
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

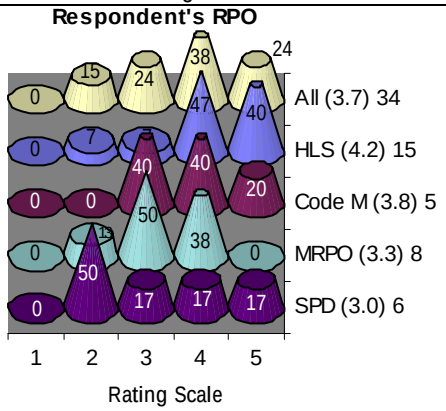
Response Descriptive Statistics

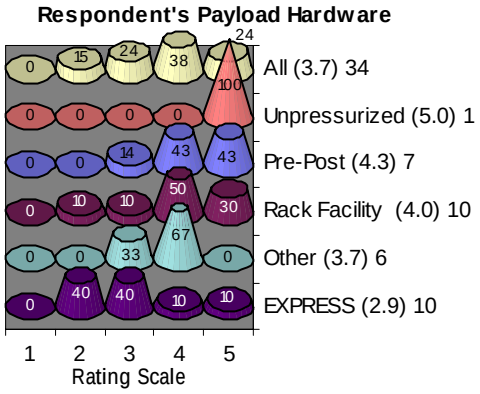
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	33 (97.1%)	19 (86.4%)
Mean score:	3.6	3.9
Scaled mean score:	65.9	72.4
Mean score Δ:	--	0.26
Standard error:	0.18	0.23
T-test:	--	61.0
Chi-square test:	--	20.7
Median score:	4	4
Skewness:	-0.55	-0.53
10th percentile score:	2	2.8
% dissatisfied:	15%	11%
% satisfied:	61%	68%

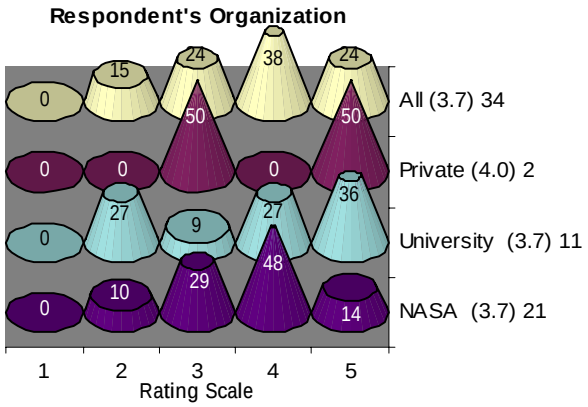


Demographic Trends (Summary): PI-PDs notably lower than PIs and PDs. Incrementally different scores between RPO groups and Hardware groups, with SPD and EXPRESS lowest, HLS highest and Pre-Post highest.









Question 1.2.5 – *Comments*

- the experiment did get successfully integrated; haven't heard any complaints from my team nor glowing praises either
- the software integration is not particularly smart one, and template is too long; length is a serious issue
- Bill Wager did a lot of the upfront work, I have kind of taken over since his passing away at KSC, operations are getting better, KSC experience is worthwhile
- fantastic job bringing hardware out to Star City, I know how hard it is to do this, done it before
- [RC: don't know if you've had any additional integration tasks, but need to ask question] we would hope end to end would be nice efficient compact easily understood process you could easily follow path through it; not sure at this point, it has been defined, so hard to rate when you don't think whole thing could be drawn on paper now; I know it is in middle of changing so don't want to rate too low to discourage anyone
- we are a little bit biased, because from prior experience we had documents already prepared; we were quicker than anyone else in getting our experiments on ISS and Shuttle; we came in and brought our box of documents and were ready to roll
- again, comments at end
- it is really improving; at the very start, it still a mystery for some on how you even get a payload on board; then process for selecting and manifesting is not defined; not much you can tell an interested party, like an AO, on what to go check {unclear}
- pretty satisfied with that; documentation could be improved

Topic Area: Program Processes – Data and Documentation
Question 1.2.6 – *Please rate your level of satisfaction with the amount of data and documentation you had to produce and deliver to meet the ISS Utilization Program's requirements.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Ratings in lower end of satisfied range but improvement is significant. Comments indicate improvement is tied to many respondents being associated with investigations continuing from Incr. 5 to Incr. 6 that had paperwork "behind them".

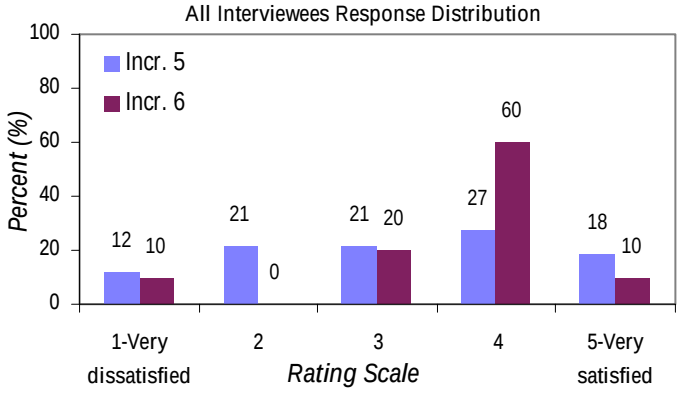
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 23rd of 27 (15th percentile)

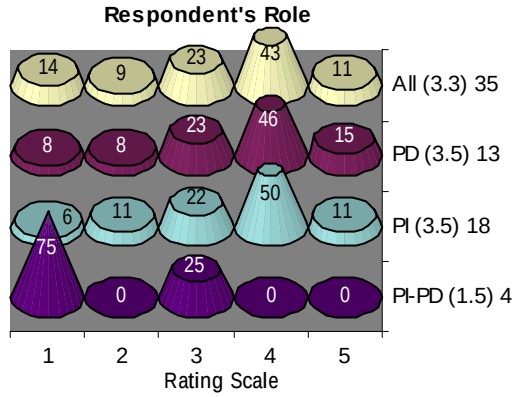
INCREMENT COMPARISON: *Improving*
Comparison Index: +10.5%
Comparison index ranking: 9th of 11 improving areas (20th percentile)

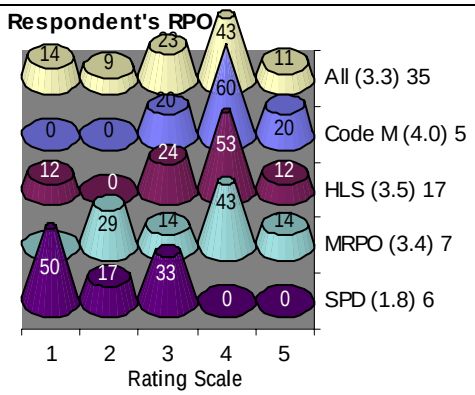
Response Descriptive Statistics

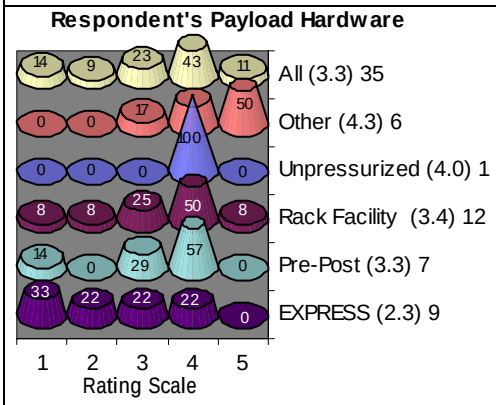
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	33 (97.1%)	20 (90.9%)
Mean score:	3.2	3.6
Scaled mean score:	54.5	65.0
Mean score Δ:	--	0.42
Standard error:	0.23	0.23
T-test:	--	76.9
Chi-square test:	--	98.8
Median score:	3	4
Skewness:	-0.18	-1.52
10th percentile score:	1.2	2.8
% dissatisfied:	33%	10%
% satisfied:	45%	70%

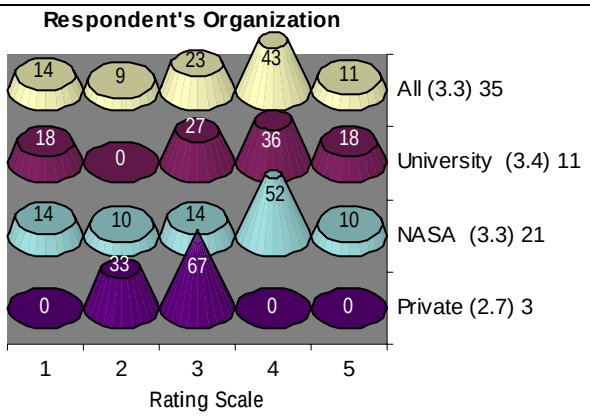


Demographic Trends (Summary): PI-PDs, SPD, EXPRESS and Private Sector groups strongly lower (dissatisfied) compared to others.









Question 1.2.6 – *Comments*

- wasn't too much or too little
- all of our requirements were in place, they took pictures on EVA, but we didn't get notification
- we did not have to do much, already up there
- most cases, what I would call reasonable amount of data and couple of cases overkill
- not involved in safety or CoFR process; no direct experience, no basis for rating
- minimal documentation, just changing Increment numbers, flight numbers
- much too much, redundant; crew training, go through same scenario repeatedly with updates
- people like Al Holt and Sue Runco make the PIs job much better, and their education at a formal level make it a lot better
- we're doing these re-flight packages so our amount of data not too bad, but for series and re-flights, we're kind of satisfied; like creating process, we've been able to reduce documentation because of getting smarter throughout the program, so paperwork
- a lot of paperwork, most was justified
- I was expected to produce a lot of documentation, and ended doing a lot more than we had expected from experience in other programs
- ED (experiment document, several hundred page document) tends be burdensome
- what we expected, would be nice to reduce some of that; there are some basic things one has to do to get into the systems, takes a lot of time to get that together
- the only document we were satisfied with is the one being deleted now, the PIA; could actually put requirements in
- about right, lots of forms towards the beginning and I did not see the point of them
- sometimes I felt that the verification data to be delivered was a burden
- by the time Increment 6 came along, I was very satisfied, because I didn't have to produce any, and you can put that in the comments; since we had flown, you can put a 5; we did not have to regenerate a thing as far as paperwork goes; it was cumbersome because there was not really a process; things were changing and I probably got a phone call a week from some group who wanted something; by the time Increment 6 came along, they had to re-verify something; so, I guess that saying that the system is willing to not to have to recopy and make it a big deal for a repeat payload which is good
- wasn't real satisfied or real dissatisfied with it; problems were in the area of payload interface agreements and annexes; I'm starting to think like an Increment coordinator and less like a PD; as a PD didn't really have that much interface with {unclear}

Topic Area: Program Processes – Data and Documentation
Question 1.2.7 – *Please rate your level of satisfaction with the required schedule for delivering the data and documentation you had to produce to meet ISS Utilization Program requirements.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: General level of overall satisfaction, but comments indicate biggest area driving dissatisfaction is too-expanded schedule with too-early drop dates (before information is really required), i.e., lack of template flexibility.

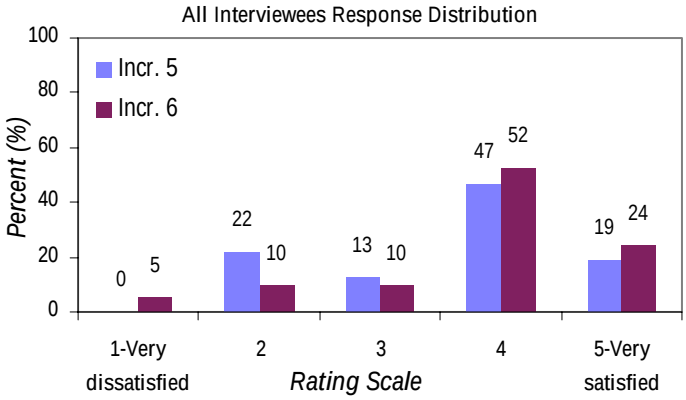
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 20th of 27 (27th percentile)

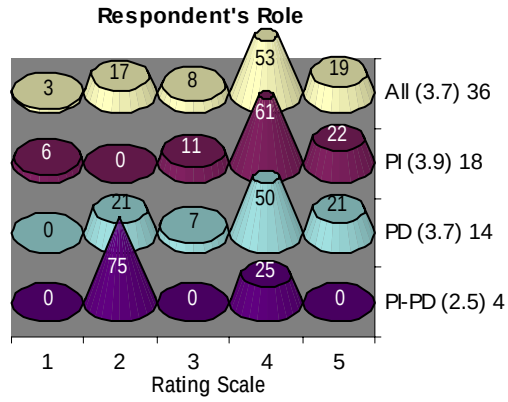
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

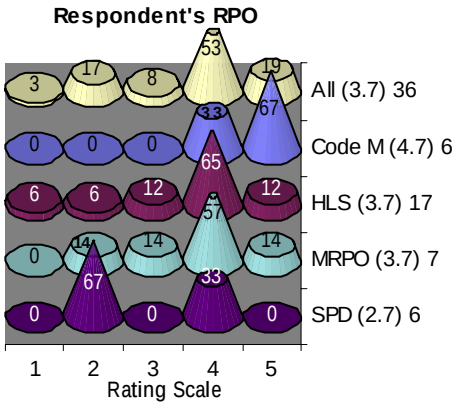
Response Descriptive Statistics

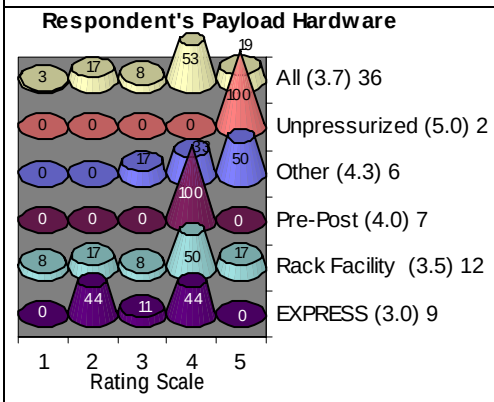
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	32 (94.1%)	21 (95.5%)
Mean score:	3.6	3.8
Scaled mean score:	65.6	70.2
Mean score Δ:	--	0.18
Standard error:	0.18	0.24
T-test:	--	46.4
Chi-square test:	--	43.5
Median score:	4	4
Skewness:	-0.45	-1.17
10th percentile score:	2	2
% dissatisfied:	22%	14%
% satisfied:	66%	76%

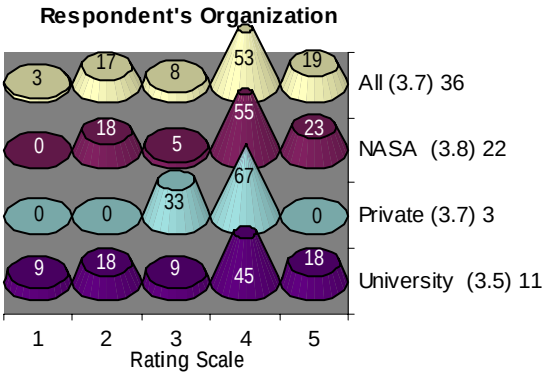


Demographic Trends (Summary): PI-PD and SPD groups strongly lower (dissatisfied) compared to others. Incremental differences evident in Hardware groups, with EXPRESS lowest.









Question 1.2.7 – *Comments*

- I understand Program has its reasons for setting schedules, but dates occur so far ahead of launch than we have our requirements, and giving our feedback is a bit early where we end up doing modifications or amendments anyway

- the schedule for delivering the documentation, since it was film, and I mean, the film had to come down with the crew, so, I mean, you could rate it as right on target; [RC - So, if the rating scale is from 1 to 5, what rating would you give it?] I would say a 5, because, we did get the film when the crew came home, we just didn't know that we had it; (NOTE: Background info ~ Crew performed an EVA and photos are requirement, but the interviewee did not know that they had taken the shots, they received no notification)

- Note: see comments to question 1.2.5 issues software integration template, i.e. flew with bag on Increments 3, 4, and 5

- my PIM came up with a matrix that we used, and it was right there in front of me in black and white, very easy to understand, no problem trying to satisfy those schedule requirements

- no direct experience

- excellent support team

- when we have enormous slips, we have to march to same template; often funding is reduced if template is not adjusted, run into funding problems

- the list of the amount of things you have to do for series items is a much less of a list, so easier to deal with

- part of the slow down, part of what slowed the process down, schedule was too expanded, needed to be compressed

- it is fine with us, prior experience

- each individual PD should be allowed to negotiate delivery dates for data based on user requirements (get rest of Suzanne's comments)

- most things were still too early

- wish there was a 3.5, schedule template is getting better; but for delivering, delivery dates could have been closer to launch

- for Increment 6, was just verifying a CoFR, we didn't have to deliver anything {unclear}

- wasn't really dissatisfied, worked here long enough to realize a lot has to be done very far out, so didn't see that as major problem {unclear}

Topic Area: Program Processes – Program Review Processes
Question 1.2.8 – *What is your opinion of the number of ISS Program formal review meetings that you were required to prepare for or participate in?*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Uniformly high level of satisfaction with this area reflected in the large proportion (95%) of respondents who consider number of formal review meetings is "just right".

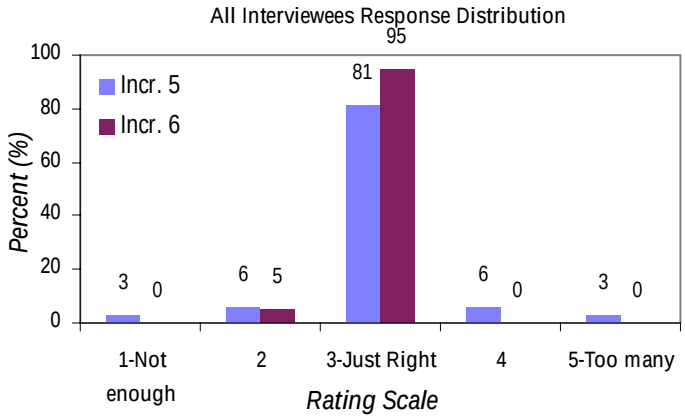
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Not applicable
Satisfaction Ranking: Not applicable

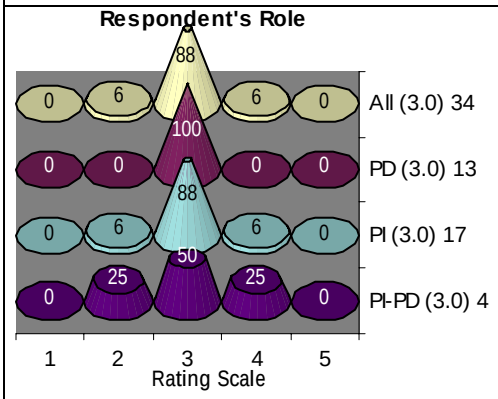
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

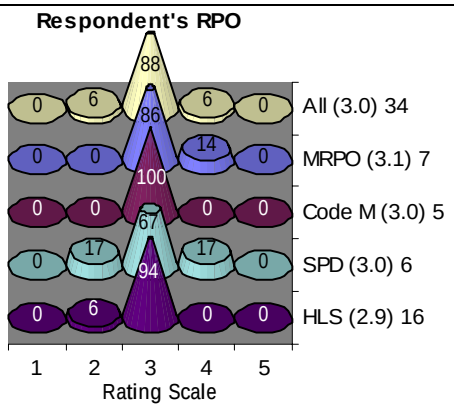
Response Descriptive Statistics

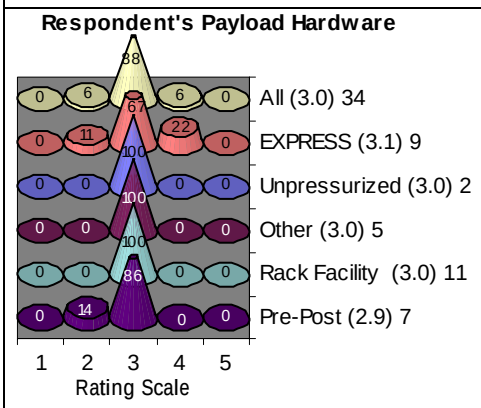
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	32 (94.1%)	19 (86.4%)
Mean score:	3.0	2.9
Scaled mean score:	50.0	48.7
Mean score Δ:	--	-0.05
Standard error:	0.11	0.05
T-test:	--	27.5
Chi-square test:	--	41.3
Median score:	3	3
Skewness:	0.00	-4.36
10th percentile score:	3	3
% dissatisfied:	9%	5%
% satisfied:	9%	0%

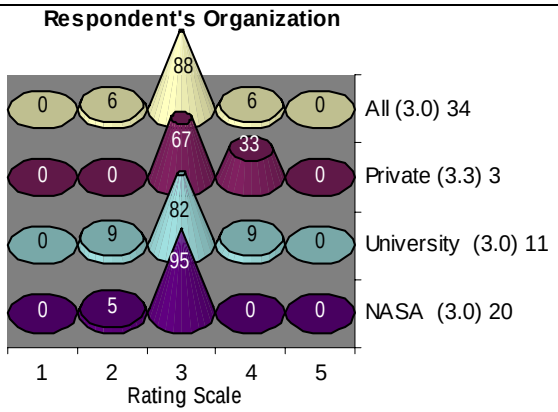


Demographic Trends (Summary): Little or no demographic differences or distinctions.









Question 1.2.8 – *Comments*

- no major meetings we had to prepare for; but had to prepare COFR, basically saying we had to stay for another x number of months; was only a 4-line email to Terry Hols and Bob Miley
- did not participate in any, ongoing
- just right
- no direct experience
- whatever was required was done, no time was wasted, issues that had to be dealt with were
- since I am a PD with experience, I am given flexibility in having to attend repeated meetings
- I don't think we definitely don't go overboard with formal review meetings; we have enough; I try to involve the Utilization group with my formal reviews so keeps everyone on same page
- no additional meetings, so just right, no complaint about it
- tried to keep at practical level, just right
- formal meetings for me ended when CDR process ended; team at JSC may have attended safety meetings and I was protected from that
- we had the PDR; CDR flew right through, being a pre-/post-, was perfect, and we tailor it; if it was sophisticated experiments, would be different
- too few, need PI Conference with results and problems, PIs to discuss; setting where my graduating class, where we all get together, investigators and NASA people, everybody with current flight experiments; environment to feed back our results
- just right, but played different roles for this Increment
- I didn't have to go to any by the time Increment 6 came along; Increment managers were prepared by just updating charts; if any issues did come up, the RPO answered off line {unclear}
- would always be nice to not have to go to quite as many meetings, but they were generally worthwhile, beneficial and just about the right number {unclear}

Topic Area: Program Processes – Program Review Processes
Question 1.2.9 – *Please rate your level of satisfaction with the ISS Utilization Program's formal review processes in general.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: High level of satisfaction with this area (no dissatisfied respondents for Incr. 6) along with significant improvement. Comments generally positive.

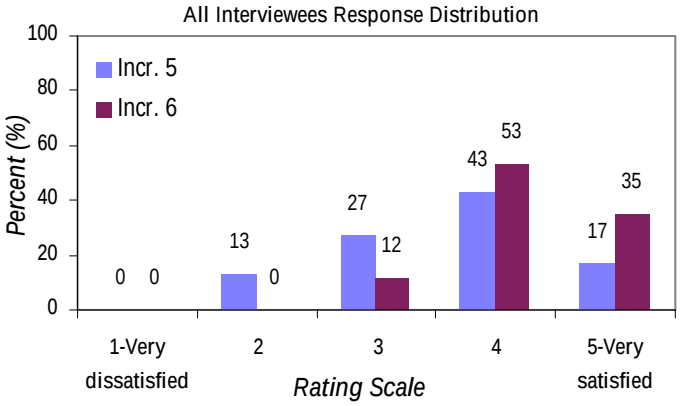
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 4th of 27 (88th percentile)

INCREMENT COMPARISON: *Improving*
Comparison Index: +15.0%
Comparison index ranking: 2nd of 11 improving areas (90th percentile)

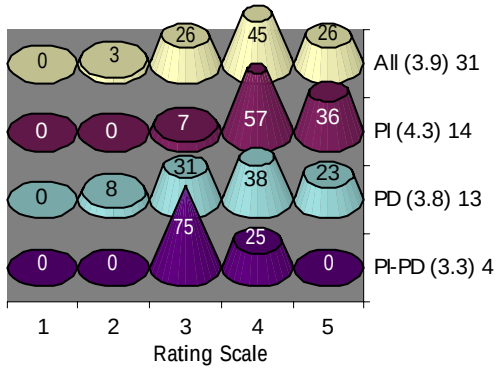
Response Descriptive Statistics

	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	30 (88.2%)	17 (77.3%)
Mean score:	3.6	4.2
Scaled mean score:	65.8	80.9
Mean score Δ:	--	0.60
Standard error:	0.17	0.16
T-test:	--	97.7
Chi-square test:	--	94.5
Median score:	4	4
Skewness:	-0.28	-0.29
10th percentile score:	2	3.6
% dissatisfied:	13%	0%
% satisfied:	60%	88%

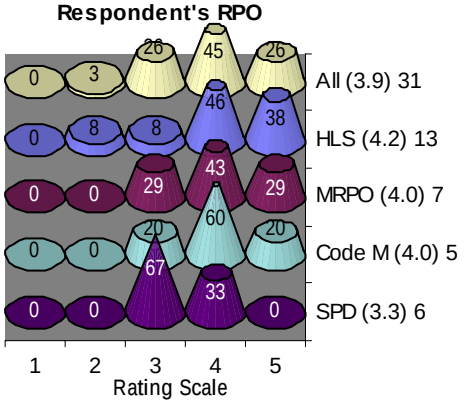


Demographic Trends (Summary): Low to moderate incremental differences between groups, with PI-PDs, SPD, EXPRESS / Unpressurized lowest, and PIs, HLS, and Rack Facility highest.

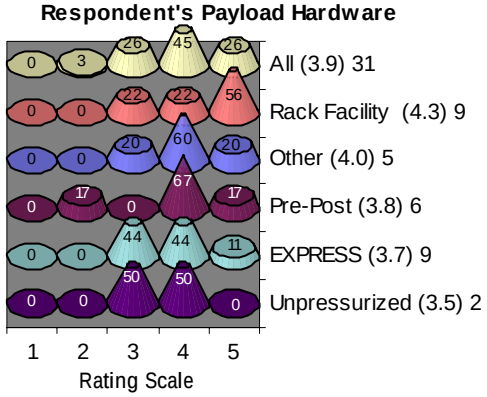
Respondent's Role



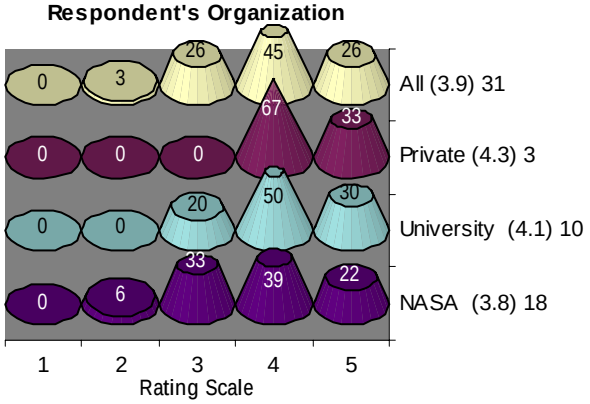
Respondent's RPO



Respondent's Payload Hardware



Respondent's Organization



Question 1.2.9 – *Comments*

- haven't been involved enough to give better or worse rating
change evaluation form process is cumbersome; going thru Research Program Working Group and PMIT, way too busy sometimes
- no basis for judgment
- small simple payload, had one safety review and CoFR meeting and that was it
- didn't perform any formal reviews
- anticipate better answer next time since more meetings will be experienced
- right now, the biggest one is CoFR presentations; not 100% fixed, but somewhat streamlined and know what correct data there is to submit; concentrating on what is more important; when first started, especially with COFR, got down to nitty-gritty level, a {unclear}
- well organized, well run, other than fact we had to travel to Houston, well done; went to meet all the other people in the project
- went through very quickly with our formal review processes; medical one was handled very efficiently and professionally, allowed us to come back and very satisfied
- earlier on, went through the CDR, thought quite a good meeting, good questions from more seasoned veterans, taught a very good process; later meetings, Investigator's workshop, how to increase productivity, not very rigorous; no ongoing rigorous review; no follow, excellent at beginning
- personally was not involved with things like CoFR
- once a payload is manifested, the formal review process is very good; how a payload enters into the system is questionable, whether there is an AO or not; pre-mission reviews are good, post-mission reviews of how things went, crew debriefs, science
- was pretty satisfied, notice my pattern of generally not giving absolute highest rating since room for improvement everywhere

Topic Area: Customer Support Interface – NASA Research Program Office Support
Question 1.3.1 – *Please rate your level of satisfaction with the support your ISS Investigation received from your assigned NASA Research Program Office.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Ratings and comments indicate consistent, generally high level of satisfaction with this area for both Incrs. 5 and 6, with exception of dissatisfied subgroups within the MRPO and SPD demographic groups.

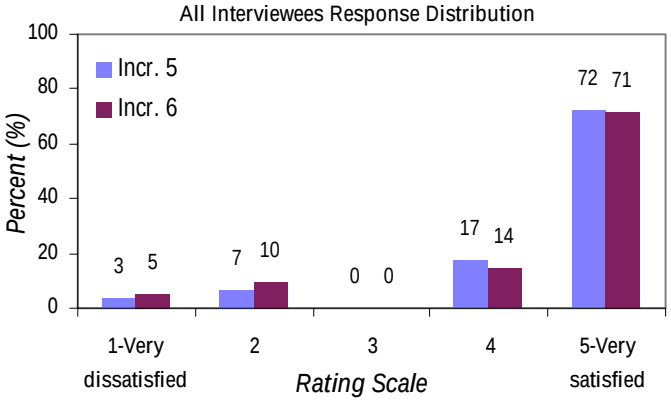
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 3rd of 27 (92nd percentile)

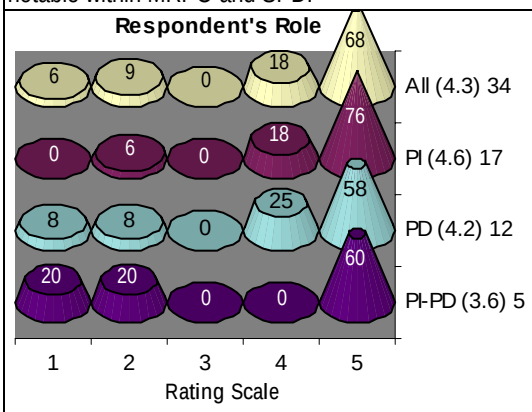
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

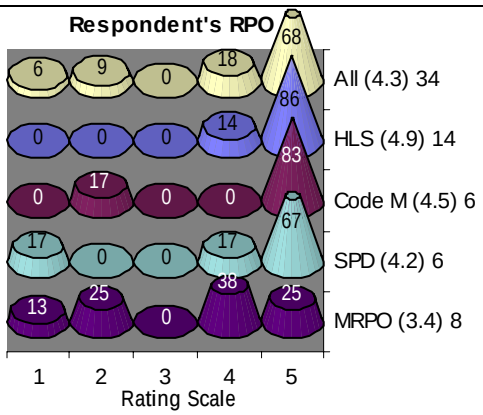
Response Descriptive Statistics

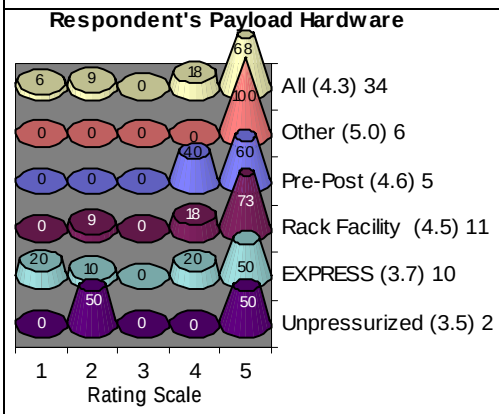
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	29 (85.3%)	21 (95.5%)
Mean score:	4.5	4.4
Scaled mean score:	87.1	84.5
Mean score Δ:	--	-0.10
Standard error:	0.20	0.26
T-test:	--	24.8
Chi-square test:	--	6.5
Median score:	5	5
Skewness:	-2.29	-1.98
10th percentile score:	3.6	2
% dissatisfied:	10%	14%
% satisfied:	90%	86%

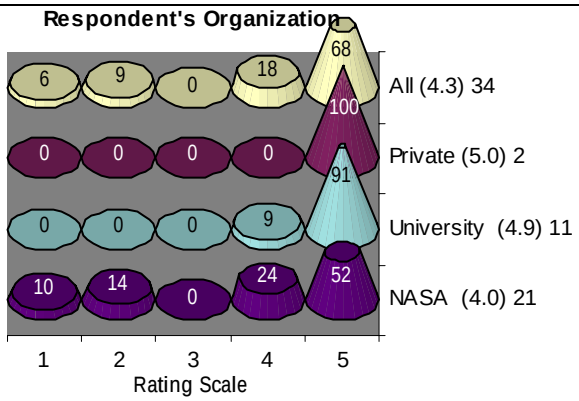


Demographic Trends (Summary): Generally incremental differences in scoring between groups, with dissatisfied subgroups notable within MRPO and SPD.









Question 1.3.1 – *Comments*

- no problems or complaints, all went smoothly
- got all the support we could ever ask for
- great job
- queried for data, good cross-talk established
- some of the docking, EVA, monitoring items that we had, getting a little better, do not think that the MRPO is as strong an advocate, to measure some of these microgravity events; referred to in one telecon as not a real experiment; thought this was a very inappropriate statement, do not think they are strong enough advocates
- feedback only gotten was from Program Scientist [Human Life Sciences who supported you, Cindy Haven, etc] yes from couple times we talked, very satisfied
- very supportive
- they gave me opportunity to collect Russian data, which is unique, didn't necessarily impact subject count, so collecting fairly unique data, was very happy with this
- our biggest problem, we don't get good flow of info from our RPO, not sure where that is along the way; things have begun to get better, but I'm not satisfied way flow of info is going from both ways; two-way flow is devoid, they should be advocate
- pretty satisfied; relate with people at NASA; such a big project maybe nothing can be done about that
- I think they did a very professional and wonderful job, Michelle Kamman
- office was demolished
- outstanding support
- really good about making sure requirements are met, that we are moved and integrated, and keeping me informed, we worked together; support I received is great
- did not want to rate self
- Dave Baumann is great, and Lockheed-Martin
- quick responses; true desire to work real issues; dedication to getting real science done
- they did all they could and bring us issues or snags to help us out
- we did a good job of supporting my experiment but always room for improvement

Topic Area: Customer Support Interface – PIM/EPIM Services
Question 1.3.2 – *Please rate your level of satisfaction with the services provided by the Payload Integration Manager (PIM) assigned to your Investigation.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Notably bi-modal score distribution (very low/very high) and demographic trends identify HLS Payload Developers as a "dissenting group" dissatisfied with PIM support. Respondents from other groups are highly satisfied.

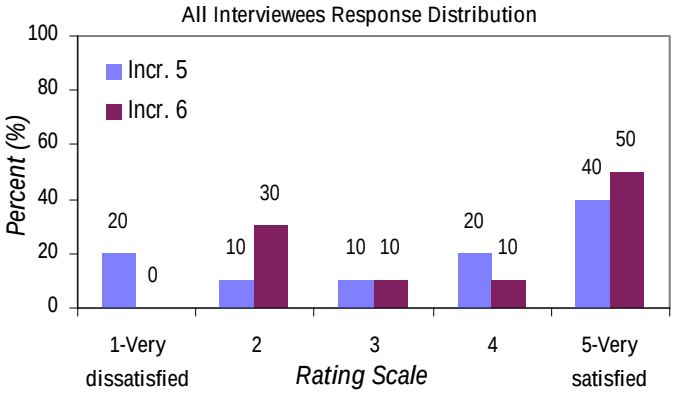
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 21st of 27 (23rd percentile)

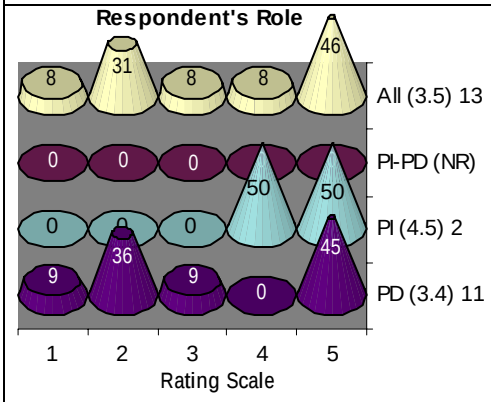
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

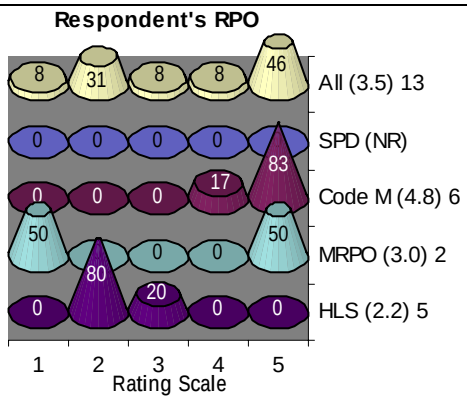
Response Descriptive Statistics

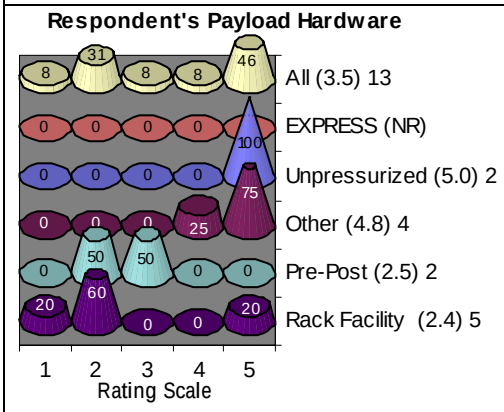
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	10 (29.4%)	10 (45.5%)
Mean score:	3.5	3.8
Scaled mean score:	62.5	70.0
Mean score Δ:	--	0.30
Standard error:	0.52	0.44
T-test:	--	33.4
Chi-square test:	--	85.0
Median score:	4	4.5
Skewness:	-0.65	-0.48
10th percentile score:	1	2
% dissatisfied:	30%	30%
% satisfied:	60%	60%

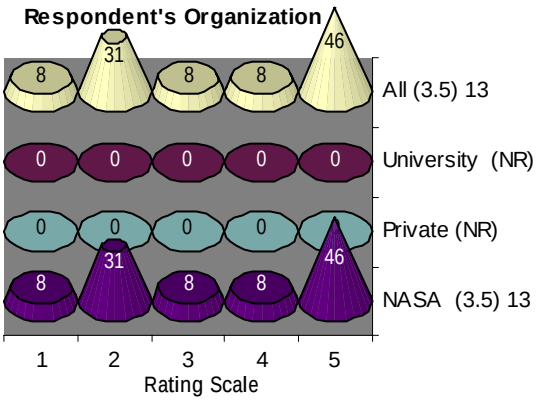


Demographic Trends (Summary): Notably bi-modal (very low/very high) score distribution with low scores correlated predominantly with PDs, HLS, and Rack Facilities.









Question 1.3.2 – *Comments*

- see previous comments; wonderful to have PIM who is proactive, takes initiative to go off and do things, and is single point of contact, Miley is there and info gets to everyone it needs to; on Increment 2 was very trying, had someone else
- see previous comments with satisfaction with PIM, PIM was excellent
- MSG served as prime interface; dealings minimal with PIM
- in the past were very helpful and knowledgeable; Increment 6 had similar experience
- he has done a tremendous job
- this is not a reflection on individual assigned as PIM, as they try very hard, they're not doing a terrible job; the problem is that the assignment is inconsistent (they usually only last a few months); lately they've had no experience in the job
- after going through multiple PIMs, feel like we don't need one; we can do on our own, we feel like we are training her, she doesn't know answers; may be Human Life Sciences unique; she is trying her best, but organization isn't set up for her to support what we do
- I never knew who my PIM was, has 3 or 4, and did not feel what their roles were and who was my advocate; PIM services for Foote did not meet my expectations for what I thought my PIM would be and what an advocate was in the PIM; thought that they were advocate for sciences in the Program
- for Increment 6, she actually talked only twice to answer crewmember question, making sure things were covered
- trying to remember, we've had a rotating PIM, musical PIMs, every few months we get a new PIM, introduces a level of dissatisfaction having to train a new one; Juliette has been with us for some time and we're satisfied; not having real good continuity

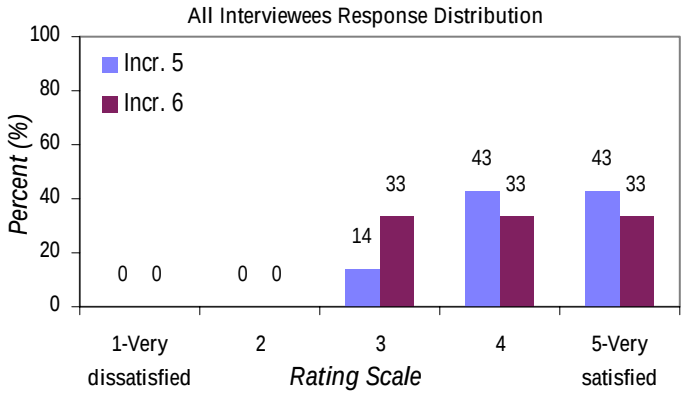
Topic Area: Customer Support Interface – PIM/EPIM Services
Question 1.3.3 – *Please rate your level of satisfaction with the services provided by the EXPRESS Payload Integration Manager (EPIM) assigned to your Investigation.*

MANAGER'S TOOL BOX	OVERALL STATUS	
NOTABLE FINDINGS: Consistent level of satisfaction, but comments note a problem with EPIM turnover.	*IMPROVEMENT*	*SATISFACTION*
	Super	
	Neutral	Green
	Sub	

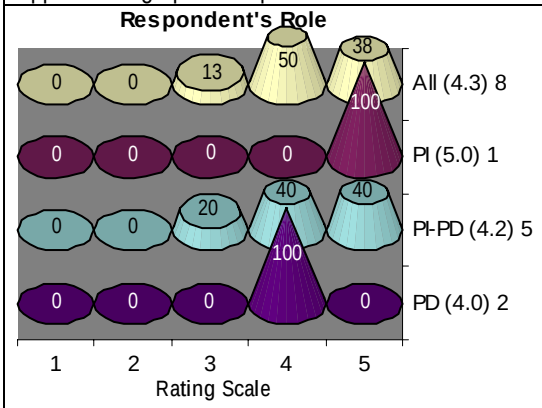
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *No Significant Change*
Satisfaction Level: Satisfied	*Comparison Index:* Not calculated
Satisfaction Ranking: 17th of 27 (38th percentile)	*Comparison index ranking:* Not ranked

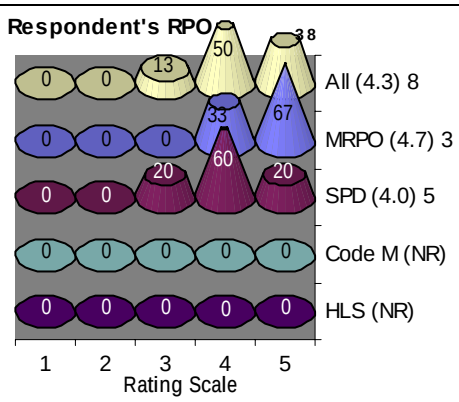
Response Descriptive Statistics

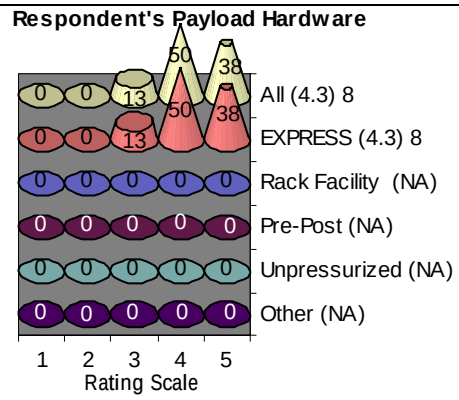
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	7 (20.6%)	3 (13.6%)
Mean score:	4.3	4.0
Scaled mean score:	82.1	75.0
Mean score Δ:	--	-0.29
Standard error:	0.29	0.58
T-test:	--	37.1
Chi-square test:	--	35.9
Median score:	4	4
Skewness:	-0.60	0.00
10th percentile score:	3.6	3.2
% dissatisfied:	0%	0%
% satisfied:	86%	67%

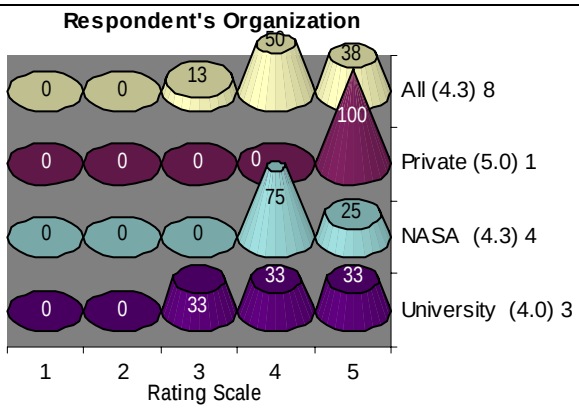


Demographic Trends (Summary): (Responses restricted to PIs and PDs flying in EXPRESS.) Overall response rate too low to support demographic comparisons.









Question 1.3.3 – *Comments*

- Jerrod Andrews is one we worked through is one we did most work with, helpful in acquiring information, he did a great job
- very good with some things and not so good with others [RC: should be working with PIM now since EPIM went away] about 3 months before accident, went away
- main reason, my EPIM in contract change, we ended up going thru several EPIMs, satisfaction wasn't as high as before; saw a lot of different faces in 3 months; hard to rate that high, had to constantly bring them back up to speed on SAMS, etc.

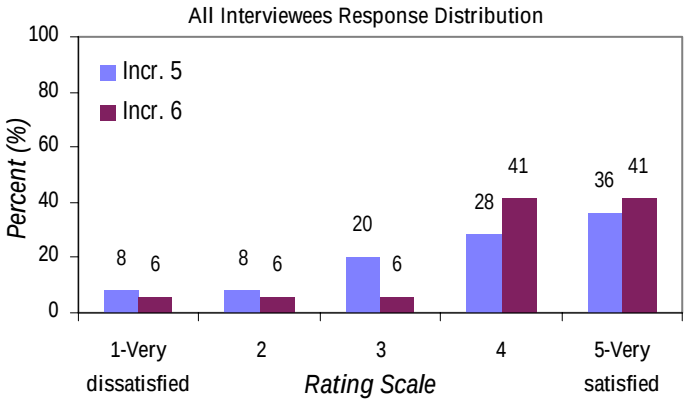
Topic Area: Customer Support Interface – Crew Interface: Training and On-Orbit
Question 1.3.4 – *Please rate your level of satisfaction with the support the ISS Utilization Program provided to your investigation in the area of Crew Training.*

MANAGER'S TOOL BOX	OVERALL STATUS	
	IMPROVEMENT	*SATISFACTION*
NOTABLE FINDINGS: Generally high level of satisfaction but rating distribution, demographic data and some comments indicate a sub-population of less-satisfied individuals likely associated with MRPO and SPD.	Super	
	Neutral	Green
	Sub	

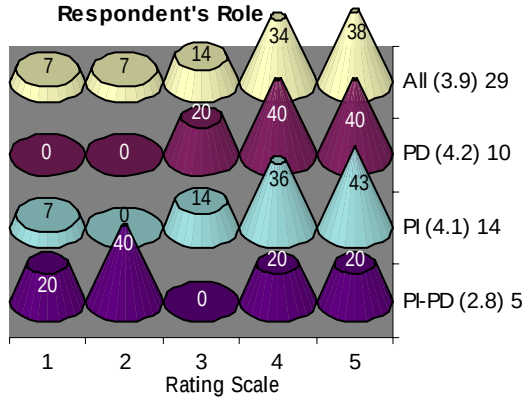
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *No Significant Change*
Satisfaction Level: Satisfied	*Comparison Index:* Not calculated
Satisfaction Ranking: 15th of 27 (46th percentile)	*Comparison index ranking:* Not ranked

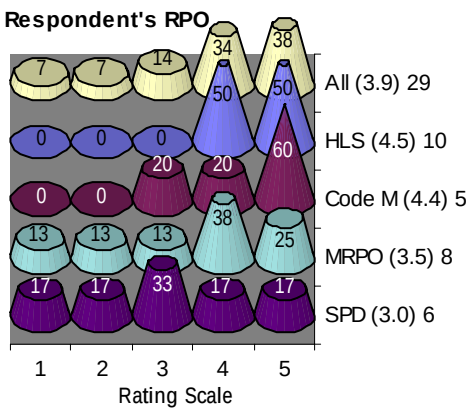
Response Descriptive Statistics

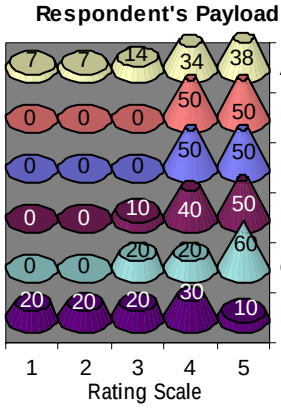
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	25 (73.5%)	17 (77.3%)
Mean score:	3.8	4.1
Scaled mean score:	69.0	76.5
Mean score Δ:	--	0.30
Standard error:	0.25	0.28
T-test:	--	56.0
Chi-square test:	--	45.3
Median score:	4	4
Skewness:	-0.84	-1.55
10th percentile score:	2	2.6
% dissatisfied:	16%	12%
% satisfied:	64%	82%

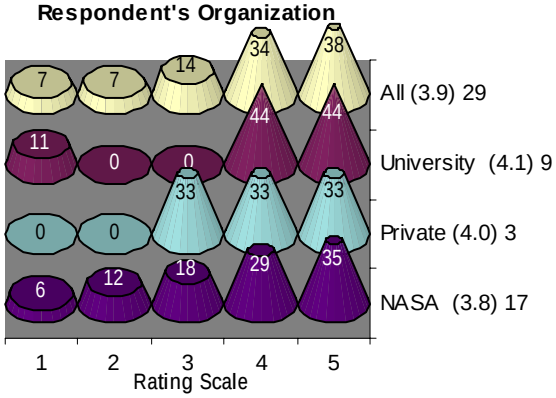


Demographic Trends (Summary): Notably lower (mid-scale/neutral) responses from PI-PDs, SPD and EXPRESS. Other groups satisfied.









Question 1.3.4 – *Comments*

- I witnessed the original crew training the crew participated in, was very impressed with it
- the crew is doing a wonderful job; level of training on board or on ground is good level; Program provided support we didn't have to ask for and yet it was there, so excellent
- again, a 5; this is just a clarification, handled through Human Research Facility, they have assigned experiments, support scientist through Lockheed Martin and no one particular [unintelligible phrase]
- crew members were scheduled and attended the training class and very attuned to learning about the Payload; I was the trainer
- from point of view, we have trained through Increment 9, training people have asked us to reduce training time; and only had one hour with MAMS and SAMS; Helen Brown and I have only one hour for training; thought lousy to squeeze time out of our one hour; thought they could squeeze time from someone with a lot more time; we have done this training several time and utilize all of the time well
- had plenty of time, whatever I asked for, I got
- other comments are, which I know is not necessarily their fault, they..make decisions where later I talk to one of the crew members, they say I didn't want to do that, or they say Why didn't you do that?, sothe crew trainer said No {unclear phrase}; based supposedly on what the crew wants and they find out that is not what the crew wants; eventually it volleys back and forth; [RC: Yeah, I see what you are saying, but, it's not like a tennis ball, like they are making decisions in the name of the crew, and they base it on crew discussions]; right, exactly, they are making assumptions based on other discussions they have in the crew office; and then they make the best judgment call and that is a tough call, but the bottom line is determining {unclear phrase} guidelines, but I think they end up determining {unclear} and we end up, in my estimation, it degrades science; because we don't do certain things we would have done and then we find out later that the crew would have done them and it's just a bad, bad situation
- pre and post, didn't require crew training
- initially, I felt the amount and attention paid crew training seemed to be insufficient, insufficient time, insufficient sessions, insufficient time, and yet the crew, Don Pettit performed it so well, that it kind of takes my argument and throws it out the window; [RC: Well, yea, I know, but when we were developing the questionnaire we, you'd be surprised that we actually agonized over that about whether we would ask you to rate the crew's performance, as opposed to how they were trained]; Yea, that is where I could come up with, I could give the ten levels; [RC: Yea, but in this case, we opted to ask something very specific, and that is How well the support was from the Program to you in order to do crew training. For example, if you had trained the crew yourself, with no help from anybody, then you would select Not applicable; but if you had required or needed support from entities at Marshall or Johnson to train the crew...]; so, in essence, this has nothing to do with how many sessions, how many hours, just the support, [RC: Yea] 4
- obviously, our activity is one of the crew directed and science related activity and need a lot more crew training before they go into orbit; has been discussed before, part of it is really the way crews are pressed to do training for EVAs and our sessions get reduced
- included MSFC training? [RC: yes]; Helen didn't give me any background but can go with 4
- interaction between scheduling and the work the ISS did, the crew work was exceptional, and in Russia, whoever scheduled the work did an exceptional job, fantastic; very strong part of this whole thing
- got trained as a trainer, did some dummy runs with astronauts, and I think that the whole process went very well; had good feed back on the training and things we could improve in the hardware
- heavily involved in crew training; the support was good
- well organized, the only training was informed consent
- I would give it a 4, and the reason it is not a 5, is that…FOOTE is a very unique experiment, with very unique training requirements, and a lot of times that my Marshall interfaces to getting my training time scheduled; I got a lot of flack for certain things that I needed in terns of time and resources and that was a problem; it was, I mean, partially maybe that they did not understand the unique requirements that I had and part of it, I just don't think that I was getting as much cooperation as I should have been; and I say Marshall interfaces because it is my understanding that they are the ones that are scheduling training, and a big problem was trying to coordinate crew schedules with my investigator schedules to get the training schedule, where I could get the PI and the crew member together to get the training done
- our crew training came through what was called systems time, wasn't through Utilization time, none through OZ office, through DT (training office), when we do Increment 7, when WORF is there
- very happy with the Crew Training support [changed rating from 4]; for these two pre/posts, there wasn't really any crew training

Topic Area: Customer Support Interface – Crew Interface: Training and On-Orbit
Question 1.3.9 – *Please rate your level of satisfaction with your Investigation's interface to the crew on-orbit.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Notable improvement in ratings for this area, comments generally positive.

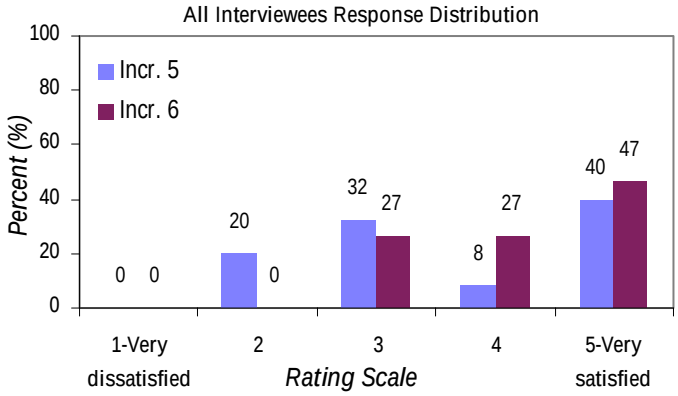
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 5th of 27 (85th percentile)

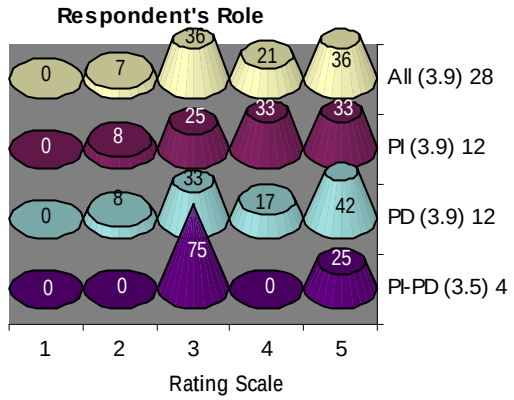
INCREMENT COMPARISON: *Improving*
Comparison Index: +13.0%
Comparison index ranking: 6th of 11 improving areas (50th percentile)

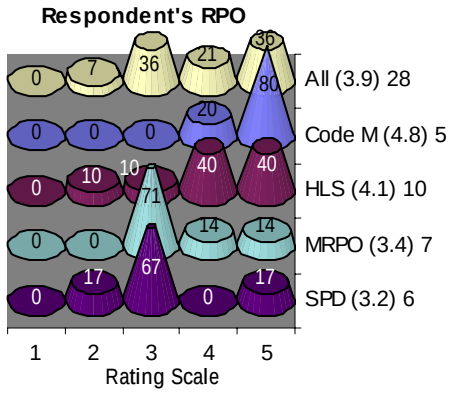
Response Descriptive Statistics

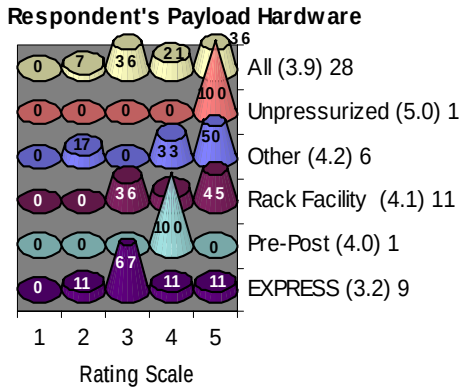
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	25 (73.5%)	15 (68.2%)
Mean score:	3.7	4.2
Scaled mean score:	67.0	80.0
Mean score Δ:	--	0.52
Standard error:	0.24	0.22
T-test:	--	84.5
Chi-square test:	--	98.0
Median score:	3	4
Skewness:	-0.08	-0.43
10th percentile score:	2	3
% dissatisfied:	20%	0%
% satisfied:	48%	73%

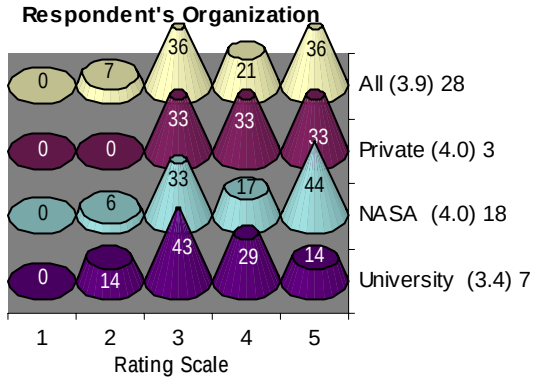


Demographic Trends (Summary): Respondents from MRPO, SPD and EXPRESS score lower (low-end satisfied) compared to Code M and HLS (satisfied).









Question 1.3.9 – *Comments*

- our team is satisfied with current system in place to get messages to and from crew on orbit
- pretty good communication with few exceptions; could send messages to crew, so it was good
- did not need access
- powered on and off by the Cadre; do not interface with the crew; they pass on information; very minimal
- we were fortunate enough to have an on-orbit debrief with one of the crewmembers and he provided good feedback on the study
- we had worked out some pre-launch code words with Bowersox where he could request things or ask questions I wanted asked; MSFC interface was not good
- written interface with crew daily, one-way communication edited by Cadre before going up to crew, can facilitate info back to the ground from the crew; wondered how crew reacted to words that went up; Don (Petit) had requested a conference with the PI, and was at his suggestion; could there be a periodic conference, to discuss progress of experiment; Don (Petit) did voice down lots of information
- interface occurs in two phases, send flight requests to crew, and see a marked improvement in Increment 6; very critical; this is how Expedition 6 got a lot of stuff online from this interaction
- it has gotten better since last time; feel better getting things up to crew and getting things done; my expectations are low; I know others are having trouble
- no need to get back to the crew, did everything that was required.
- do not have a lot of interface; have done some photography
- Paycom is very protective of the crew member; there are times when we would have liked to have gotten up information but couldn't; balanced in that at one time by having direct communication with crew member; Paycom overly conservative
- still difficult to get messages to the crew, we interact with the crew so much so it is more at the forefront
- had multiple routes of communication with the crew, e-mail, direct private conference, very useful
- we had such a good rapport with the crew because of how much CEO-plus they did, the whole operation flow was very good; getting info up and down from crew

Topic Area: Customer Support Interface – Change Requests
Question 1.3.5 – *If at any time during your Investigation's development, integration and operation your requirements of the ISS changed, please rate your level of satisfaction with how the ISS Utilization Program responded to your change request.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Solid level of satisfaction with significant improvement, few negative comments.

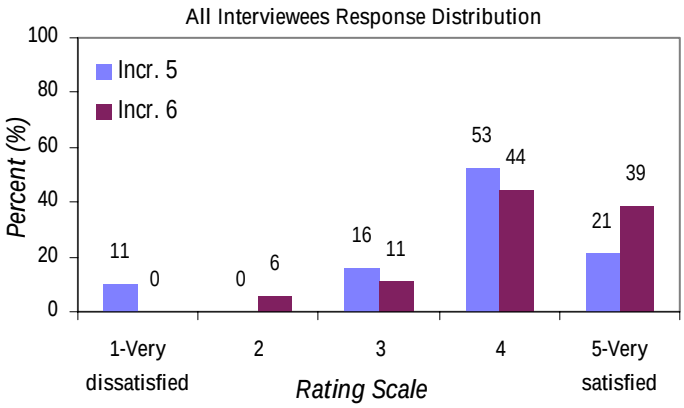
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 6th of 27 (73rd percentile)

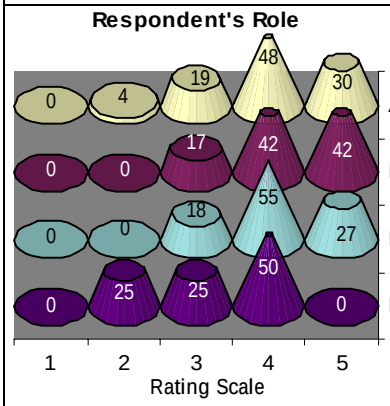
INCREMENT COMPARISON: *Improving*
Comparison Index: +10.7%
Comparison index ranking: 8th of 11 improving areas (30th percentile)

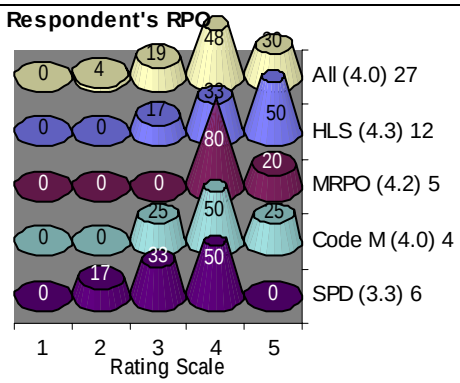
Response Descriptive Statistics

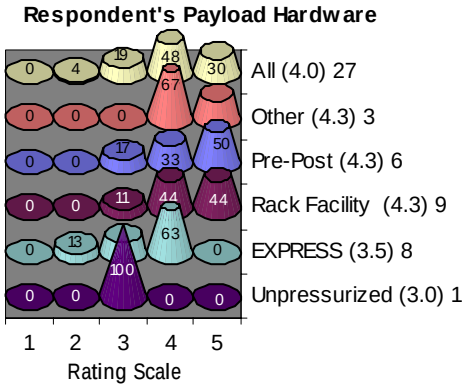
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	19 (55.9%)	18 (81.8%)
Mean score:	3.7	4.2
Scaled mean score:	68.4	79.2
Mean score Δ:	--	0.43
Standard error:	0.26	0.20
T-test:	--	79.3
Chi-square test:	--	83.5
Median score:	4	4
Skewness:	-1.40	-0.98
10th percentile score:	2.6	3
% dissatisfied:	11%	6%
% satisfied:	74%	83%

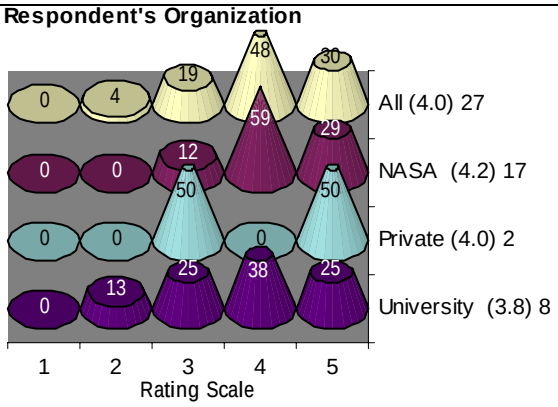


Demographic Trends (Summary): Demographic groups generally similar with somewhat lower scores from PI-PDs and SPD.









Question 1.3.5 – *Comments*

- one time we submitted a change request, was overcome by events, so not a problem, but change process is more bureaucratic now than it was in previous Increments; MACE 2, we took a change and were done in 2 weeks; now if you try to change through system;

- new software; fixed bags for Increment 3; process went fine; clear what we were trying to do; Program did not put obstacles in place

- they asked for opportunity to conduct an extra run and got in an extra run

- landing was changed, not my own request, but things made it back well to the USA, turnaround was fast

- they were very reluctant to make any changes, but sympathetic at times

- we haven't put in a big change; if you put in Russian experience with responding to a change, then that was sufficient, couldn't have been any more supportive than they were to obtain the Russian data

- did have some change requests, requested additional samples, and that was worked pretty well; during operations things worked well

- had to process 1 CR through manifest change; we've always seemed to get good response getting CRs through system, looked at, etc; we've had 1 reject, but you expect that, can't get everything you want

- we found a problem with getting the Russian crew to give us specifics, the amount of exercise they did and relating to their diet; in flight, there are exercise logs, supposed to write it down, was not really a change, and I did not get that data from the Russian crew and went and said, how do I get that data; impacted the data collected, harder to interpret that data; would be important to get that data and NASA cannot get that data for U.S.; also asked about the diet information and anticipating not getting from the Russian crew

- Increment 6 started to do a slightly different experiment, that whole process went very well, accepted and approval process, and was very satisfied with that; experiment to be done inside

- responded well

- it couldn't have gone any better if it had been planned

- asked for new data and I got it

- our payload changed because the crew would make request, and so we integrated crew request in with our CEO specific target and payloads operations folks would facilitate getting the word to us that the crew wanted such and such and then we put it in our mess and help them hide it, and not that we wanted change, but it was changed by the system. So, actually I was very satisfied. I guess I will put a 4, because sometimes the lack of understanding of our personnel resources and really what it takes to catalog and keep track of things, sometimes, the lack of that knowledge, they expect certain things to be turned around rather quickly when it really wasn't part of the payload but you want to keep the crewmembers happy and public affairs happy and so, I will put a 4 there just because I guess a lack of understanding how much resources it takes to get a turn around. Our communications were good, with the LIS, TLCO, and the PODs were actually good, they were good {unclear}

- pretty happy with {unclear} ???; tend to think about change paper, like when we're making changes to manifest, and I didn't have anything like that with these experiments, but the requirements I had did change to certain extent since having to go over and do {unclear}

Topic Area: Customer Support Interface – Communication with Support Personnel
Question 1.3.6 – Please rate the level of your satisfaction with the communication flow between you and the personnel in the ISS Program.

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Similarly high level of satisfaction maintained for both Incrs. 5 and 6. Comments identify inconsistent, parallel communication as dissatisfaction driver.

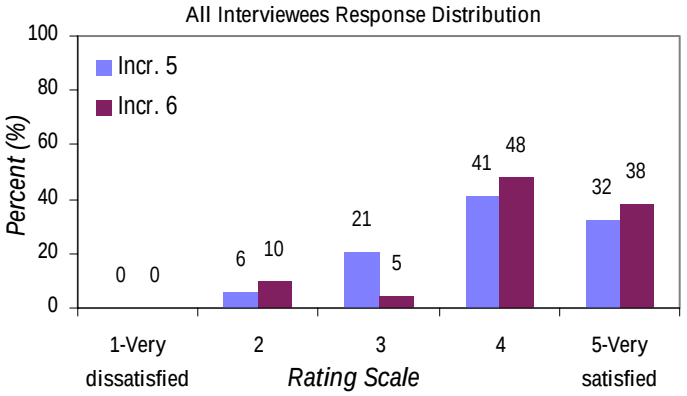
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 9th of 27 (65th percentile)

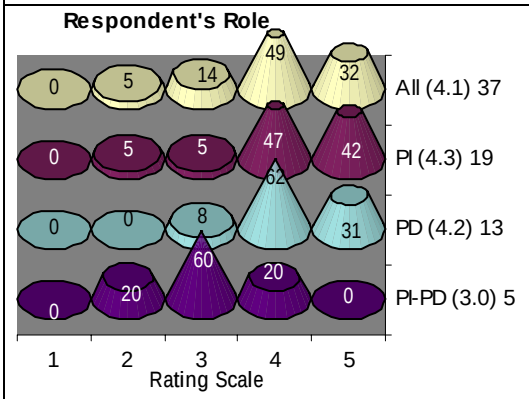
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

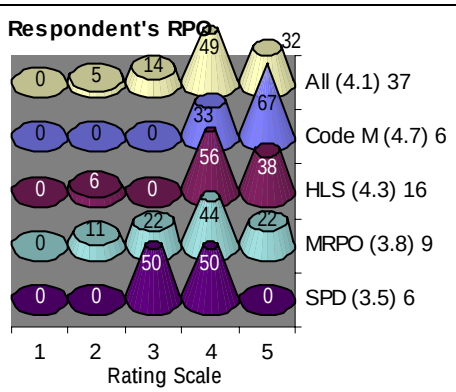
Response Descriptive Statistics

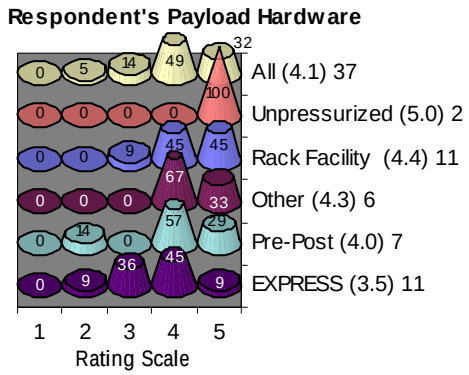
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	21 (95.5%)
Mean score:	4.0	4.1
Scaled mean score:	75.0	78.6
Mean score Δ:	--	0.14
Standard error:	0.15	0.20
T-test:	--	43.2
Chi-square test:	--	67.3
Median score:	4	4
Skewness:	-0.55	-1.18
10th percentile score:	3	3
% dissatisfied:	6%	10%
% satisfied:	74%	86%

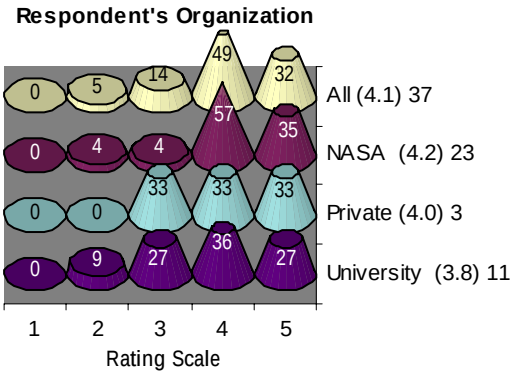


Demographic Trends (Summary): Lower scores (mid-scale to low-end satisfied) for PI-PDs, SPD, MRPO and EXPRESS groups.









Question 1.3.6 – *Comments*

- I communicated with ISS personnel on rare occasions, but when I did, communication flow was acceptable

- excellent, we have very good PIM and he is single point of contact, and info flows where it needs to flow

- not a problem, worked well

- open door policy

- whether a tool becoming available where things are being changed or negotiated, why would you not ask the people who are going to have a big problem with this; for instance, we are changing the EXPRESS racks at this time and on this day and did not know about it, a lot of this is somewhat dependent on the Cadre position; a particular POD might give us all the changes and some we might get blindsided by it; just short time to deal with and or object something; some basic guidelines to take out the personality factor

- more rumor than anything else, things exchanged so fast, you're on, you're off, etc; could be from Russian side too, had to be ready to go, not a lot of time to get backup hardware since launch was from Russia, our stuff was sitting at Baikonur and we {unclear}

- difficulty is title or going to someone for piece of info they assume another person knows but that's not always the case

- almost daily conversations with the ESS, I am here so it is an advantage and benefit to interfacing

- folks were very responsive

- in the past, I have been of the feeling that there needs to be more communication and continues to improve

- sending you some Helen comments also; at lower/working level, info flows well through our group and Utilization group; at higher level, don't seem to get info flow-down, we expect it to come from RPO and don't' get it...left in dark; we have some problems, some {unclear}

- see comments for question 1.3.5 regarding issues with Russian data; research variables are involved

- there were a couple of slip-ups, seemed to be some miscommunication at KSC, some questions that needed some answers and had a little bit of difficulty getting hold of the right people; now our ESSs are carrying phones, so this has been handled; critical times in communication we could not find the person; had meeting, was corrected

- whole issue of parallel communications

- I felt that technical communication was sometimes low or bad, I did not feel that the Program understood the science very well; had questions about what FOOT was about, was trying to get something accomplished for FOOT and was completely wrong; level of understanding was low

- seems very open; people would listen; sometimes they would try to make decision for you (at POD level); tended to go away over time {unclear}

- didn't have any significant complaints {unclear}

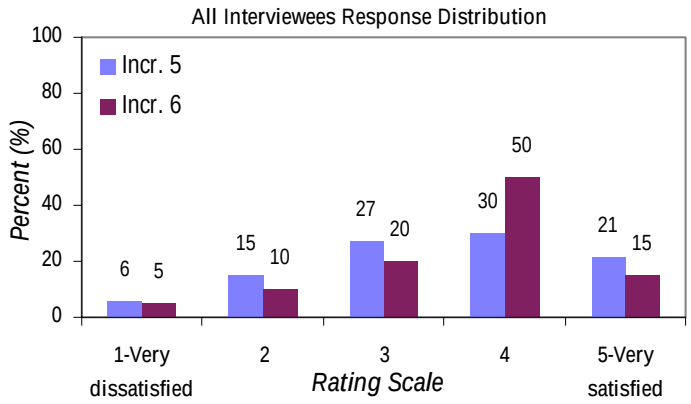
Topic Area: Customer Support Interface – Information Sources
Question 1.3.7 – *Please rate your level of satisfaction with the ease of locating necessary information.*

MANAGER'S TOOL BOX	OVERALL STATUS	
	IMPROVEMENT	*SATISFACTION*
NOTABLE FINDINGS: Mean scores are in satisfied range but distribution of ratings is quite broad, reflecting dissatisfied sub-groups in SPD, MRPO and EXPRESS. Comments indicate PIM support contributes to satisfaction, while PALS and JSC firewall contribute to dissatisfaction.	Super	
	Neutral	Green
	Sub	

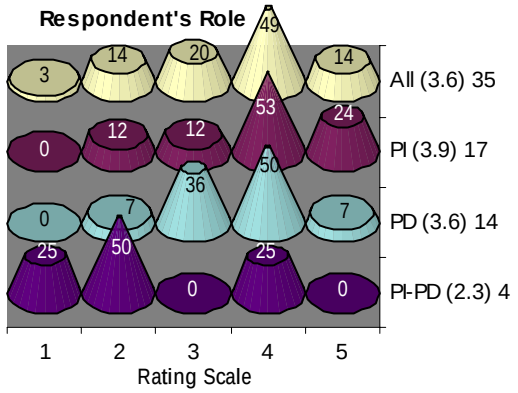
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *No Significant Change*
Satisfaction Level: Satisfied	*Comparison Index:* Not calculated
Satisfaction Ranking: 22nd of 27 (15th percentile)	*Comparison index ranking:* Not ranked

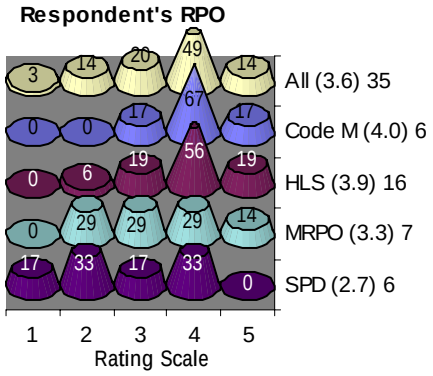
Response Descriptive Statistics

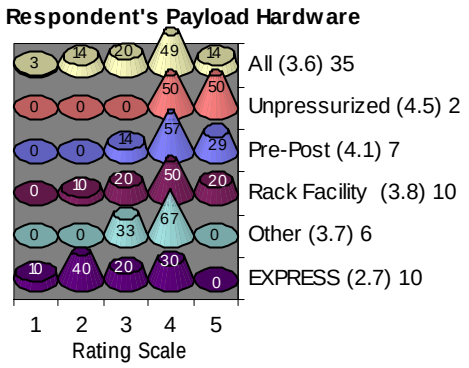
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	33 (97.1%)	20 (90.9%)
Mean score:	3.5	3.6
Scaled mean score:	61.4	65.0
Mean score Δ:	--	0.15
Standard error:	0.20	0.23
T-test:	--	34.9
Chi-square test:	--	55.2
Median score:	4	4
Skewness:	-0.38	-0.91
10th percentile score:	2	2
% dissatisfied:	21%	15%
% satisfied:	52%	65%

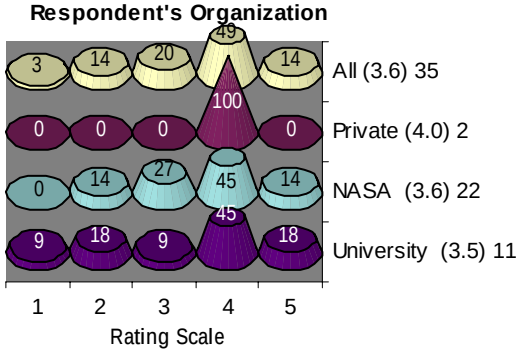


Demographic Trends (Summary): PI-PDs distinctly lower (dissatisfied) compared to other groups, SPD and EXPRESS slightly lower than other groups (borderline neutral/dissatisfied).









Question 1.3.7 – *Comments*

- when I needed info, consulted with colleagues from SM-3, and they typically accommodated me
- sometimes it is a little difficult to track things when they are changing; but has gotten better since previous Increments
- JSC firewall, logical; can't get through firewall to see documents for folks like us; would indicate forbidden
- sometimes I did not know what I should be looking for, just a phone call away to the PIM; PIM helped locate information
- my source for locating information was Helen Brown, and she would direct me; it was apparently obvious where information was located
- vague [RC: if you needed to know something, were you able to find where info resides?] yes, just made a few phone calls
- can't find out where info is very well, this is the difficulty
- really haven't had a problem
- sometimes to locate information was through office mates who had prior experience
- this area has improved from Increments 3 and 4
- we feel you need web portal that is now being created and have high hopes for it
- I haven't had a lot of need to go beyond my ESS, David Baumann
- one way flow from Station, was retrieving information
- Marshall and PIM very helpful
- the PI needs an overview of where the information is and how to find it
- very easy, most of our stuff is biomedical, we know phone numbers to call; if there is a question, we refer to laminated card with telephone numbers
- if I need something I know where to find it; one thing the PIM does OK is find the info when we call
- there was a time where I had difficulty finding things on PALS, like CRs and comments for CRs
- PALS not exactly [easy] to use when trying to get definitions for safety requirements; process flow document describing was difficult to find; work to be done there, libraries (PALS) is not easy to locate docs, have to know title or number {unclear}
- feeling rating sometimes its a little difficult for me to navigate through all the different websites and find things I know are there; there was some info on Russian integration process on getting stuff flown on Russian vehicles and certification {unclear}

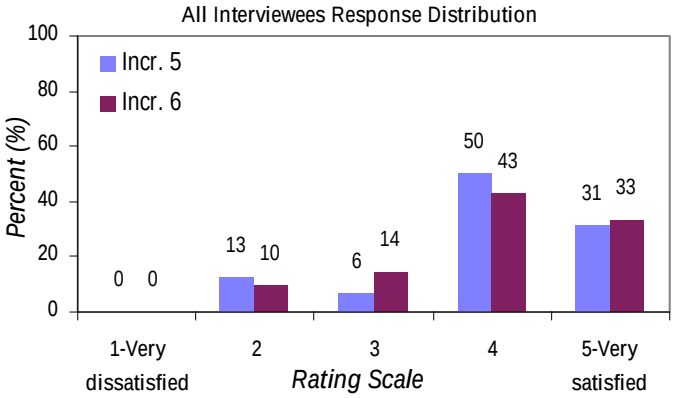
Topic Area: Customer Support Interface – Information Sources
Question 1.3.8 – *Please rate your level of satisfaction with the ease of accessing necessary information once it is located.*

MANAGER'S TOOL BOX	OVERALL STATUS	
NOTABLE FINDINGS: Comments identify JSC firewall as contributing to dissatisfaction, otherwise respondents are consistently satisfied with this area.	*IMPROVEMENT*	*SATISFACTION*
	Super	
	Neutral	Green
	Sub	

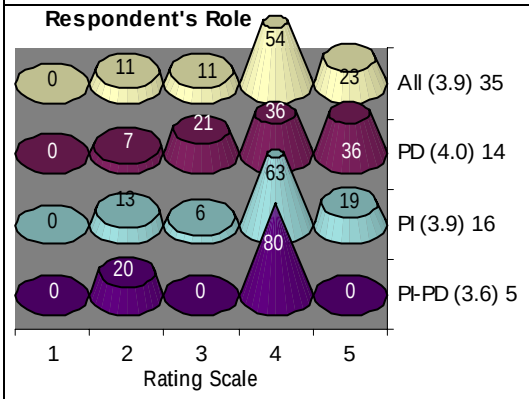
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *No Significant Change*
Satisfaction Level: Satisfied	*Comparison Index:* Not calculated
Satisfaction Ranking: 16th of 27 (38th percentile)	*Comparison index ranking:* Not ranked

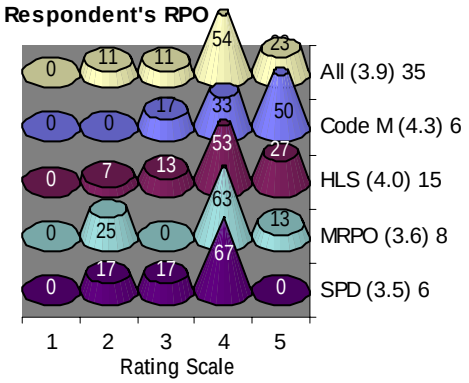
Response Descriptive Statistics

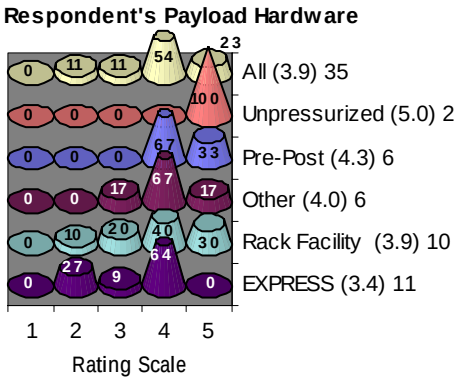
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	32 (94.1%)	21 (95.5%)
Mean score:	4.0	4.0
Scaled mean score:	75.0	75.0
Mean score Δ:	--	0.00
Standard error:	0.17	0.21
T-test:	--	0.0
Chi-square test:	--	53.6
Median score:	4	4
Skewness:	-0.96	-0.78
10th percentile score:	2.1	3
% dissatisfied:	13%	10%
% satisfied:	81%	76%

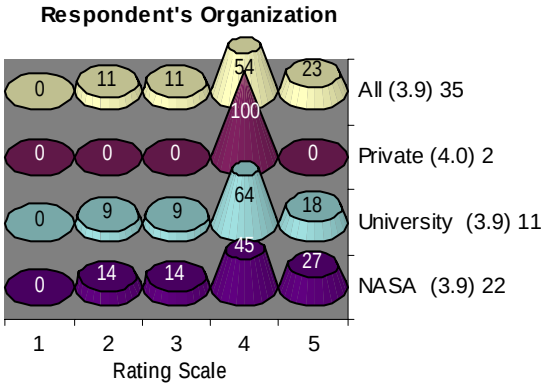


Demographic Trends (Summary): All groups generally similar in satisfaction, no strong demographic distinctions.









Question 1.3.8 – *Comments*

- asked about familiarity with Sports Page, info on HRF [RC: no]
- I am behind JSC firewall, on the inside, so easily available; I don't know how payload on other side would survive
- would yell foul, and someone would have to send us an e-mail; couldn't browse anything
- sometimes some of these web pages and tools, once you get the access to the tool, everything is great, but the gyrations of getting that access is difficult; process can be difficult
- most of my questions were oral/verbal, so little access, if any at all
- no major problems most of the time
- if I have a problem, I phone Carla or Felicia, and they find it pretty much
- web portal won't help this but only get you to info; everyone's trying to make computer system secure, then end up with issues in trying to access; no pre-coordination with new link coming online; different Centers have firewalls and they enable folks to {unclear}
- no problem with that
- supplied to us
- can't access unless know where it is
- overall, I would give it a 4; I am pretty satisfied; but, for instance that Investigators Working Group, we had all this information that says is available to ya on this website, and then all of a sudden you find out that you have to get a password, and apply for a password and wait for the password and finally you do get authorization to get in, and they send you the e-mail, and you kind of wonder WHY, I forgot why I was gonna get in there...(laughter); so I mean, there have been a couple of occasions when it was restricted or say for instance I was at a non-NASA type computer, and I am trying to get information off of NASA and of course I am fire-walled; say at Kennedy though, they are all linked; and if you can get that information, so, but then again they have provided me with onsite space; so in general I would say a 4; there have been times, specific times, but overall it has been fairly easy
- good websites
- once you find it, then if you get the document up, whether it is readable or printable, could be tough
- once I find it, I don't have to have any problems with access

Topic Area: Customer Support Interface – Information Sources
Question 1.3.10 – *Please rate your level of satisfaction with any educational/orientational information you received from the ISS Utilization Program at the outset of your ISS Project.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Mean score is in neutral range but broad rating distribution has very significant (43%) sub-population of dissatisfied respondents covering many demographic groups.

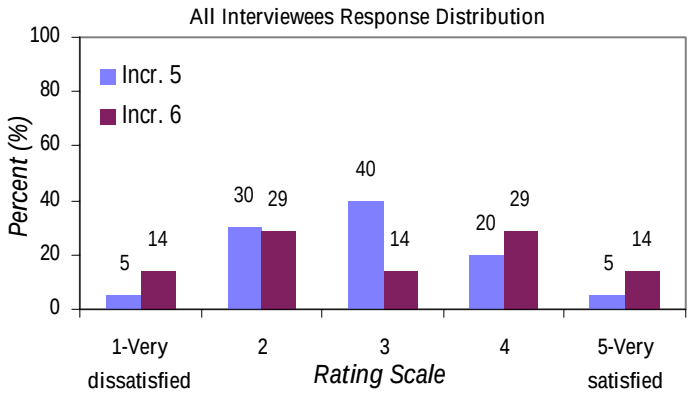
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Yellow
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Neutral
Satisfaction Ranking: 25th of 27 (8th percentile)

INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

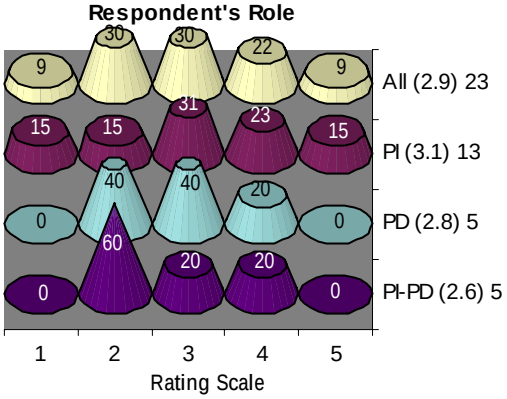
Response Descriptive Statistics

	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	20 (58.8%)	14 (63.6%)
Mean score:	2.9	3.0
Scaled mean score:	47.5	50.0
Mean score Δ:	--	0.10
Standard error:	0.22	0.36
T-test:	--	19.7
Chi-square test:	--	89.5
Median score:	3	3
Skewness:	0.22	0.00
10th percentile score:	2	1.3
% dissatisfied:	35%	43%
% satisfied:	25%	43%

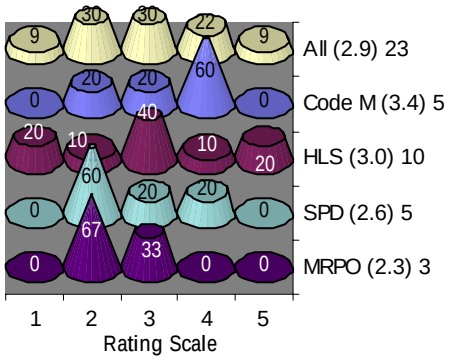


Demographic Trends (Summary): Broad to slightly bi-modal character in overall distribution apparently reflects lower satisfaction for SPD and MRPO respondents compared to relatively higher satisfaction for Code M and HLS.

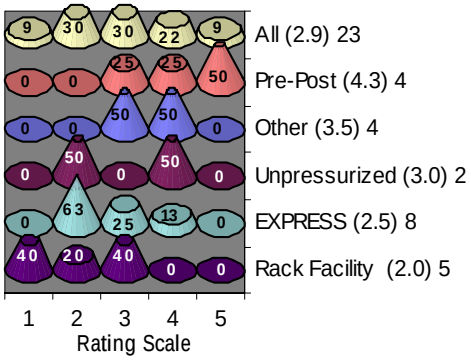
Respondent's Role



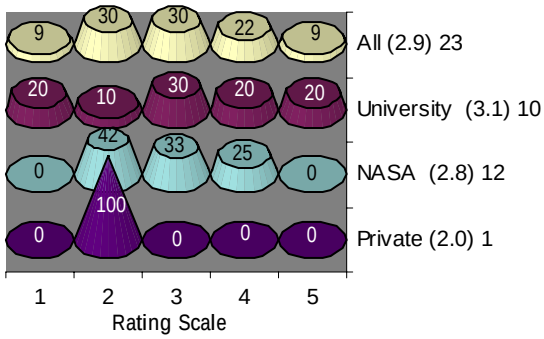
Respondent's RPO



Respondent's Payload Hardware



Respondent's Organization



Question 1.3.10 – *Comments*

- unsatisfactory for MISSE; only reason we had success we had integrating this is because I worked in the Payloads Office previously; process has gotten a lot better, not perfect, since there should be just one briefing that tells what should be expected of integrating a payload

- what education? we were in the Program before there was a Program; make it up as you go along

- boy, you are making things more difficult now. Let me say a 4; once you go through the process, then things tend to make more sense

- difficult to find out all these things; would be good to have one central location to say these are all the things to do and who you contact to get going here; relied on Helen Brown a lot on this, would go back and forth

- we're a mature study

- no, I don't think so, I mean, I think, again, I'm at a little bit of an advantage in the sense that I am here and I know the program essentially; I think that if I was an outside investigator, this would be quite a daunting system to get into; and it is an interesting question that you bring up and I think it would be useful to have some kind of orientation for somebody to just kind of lay out the framework where you are going to go; now, I am sure that you have these documents or they actually exist, but you don't actually have a sit down with new investigators, do you, in the beginning?; [RC: Well, why don't you give me a rating and I will tell you more about it] A 3, I guess, because, I mean that never happened, I never had any kind of orientation or anything; [RC: Right, and this is an area the Program is trying to improve right no, OK]; because it would be nice to sit down with a group or one of two people and say, These are the basic facts, the stream that you are going to go through from beginning, middle and end, and you, I mean, you end up going through and you end up learning as you go and you never are given the big picture at the onset, that would be some kind of improvement; I don't know maybe every year like a school orientation ~ where everything is and try to give a sense of where they will go

- just picked up the ball and do not remember receiving any education or orientation

- because we are Code M, may have different situation as opposed to investigator who is not

- at first was no real orientation, because later I did presentation, and has improved 100%; need for more education of PIs

- received almost nothing

- of course, came in with unique knowledge already, lots I did not know, and ESSs filled in the gaps

- great orientation; I got a blizzard of paperwork and got a lot of help with it both at NASA and at Lockheed-Martin; number of senior personnel that I could call for help

- I had some difficulty understanding what the utilization could do for me, still have some difficulty

Topic Area: Customer Support Interface – Information Sources
Question 1.3.11 – *Please rate the level of your satisfaction with the usefulness of the ISS Utilization Program's electronic reference material, including websites and CD-ROMs.*

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Notable improvement in ratings for this area despite the fact that many verbal comments indicate respondents did not have much familiarity or use for electronic references. Comments identify Payload Information Source as possible contributor to satisfaction.

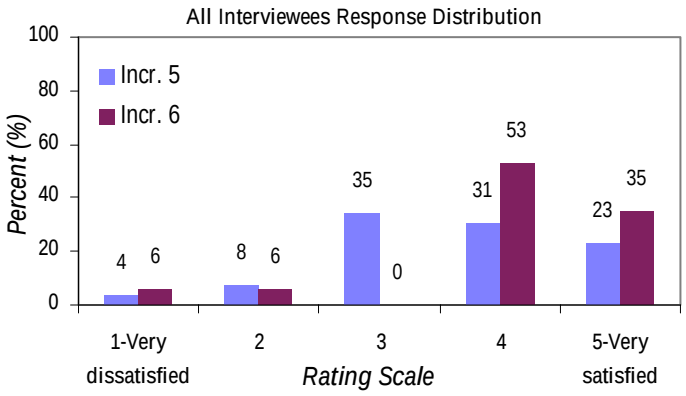
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: 14th of 27 (46th percentile)

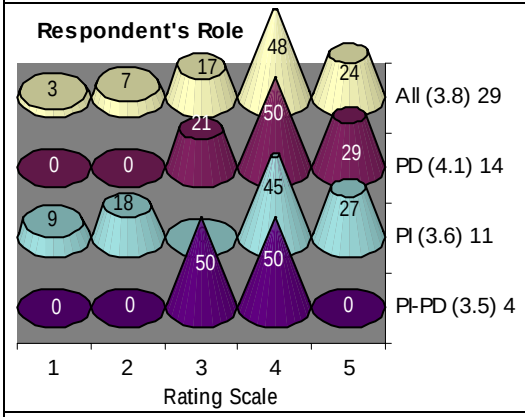
INCREMENT COMPARISON: *Improving*
Comparison Index: +11.1%
Comparison index ranking: 7th of 11 improving areas (40th percentile)

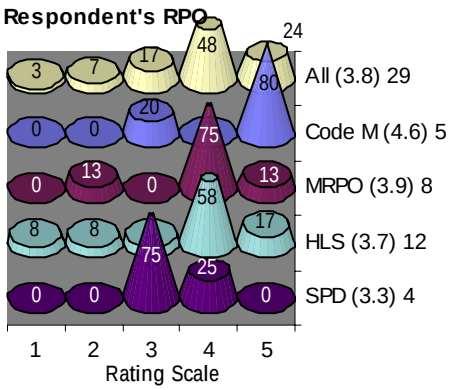
Response Descriptive Statistics

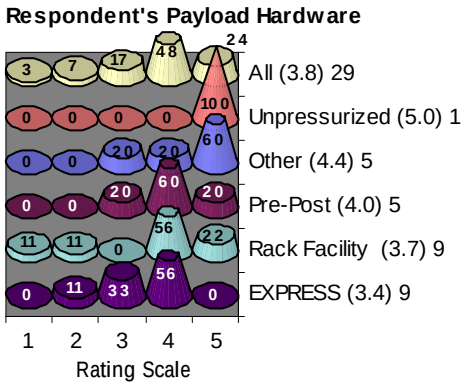
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	26 (76.5%)	17 (77.3%)
Mean score:	3.6	4.1
Scaled mean score:	65.4	76.5
Mean score Δ:	--	0.44
Standard error:	0.21	0.26
T-test:	--	80.8
Chi-square test:	--	95.9
Median score:	4	4
Skewness:	-0.44	-1.78
10th percentile score:	2.5	3.2
% dissatisfied:	12%	12%
% satisfied:	54%	88%

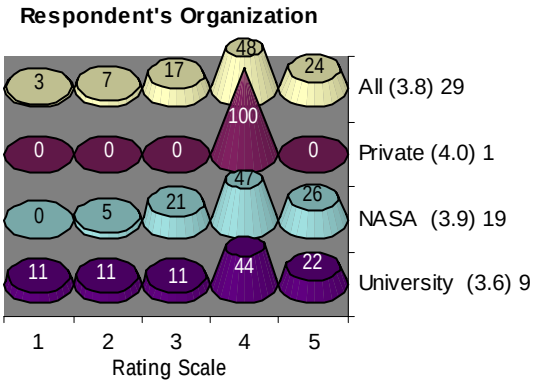


Demographic Trends (Summary): Generally incremental differences between groups with PI-PDs, SPDs and EXPRESS at low end.









Question 1.3.11 – *Comments*

- [RC: if you think about Sports Page, how would you rate?] 4
- websites are very useful
- I have no clue what's available, is the only way I know to respond to that; I don't know what is out there to help me, and to be fair again, I am not looking for anything at this point and time; I really can't answer the websites that we could not get to???
- Payload Information Source, does have and seems to think it is good
- when you get to the websites, information is very useful; well done and very useful; the process, communication issue, is somewhat problematic; sites themselves are in good shape
- haven't used any
- we didn't use them at all, never used PDL
- I haven't used those or any I can think of
- don't recall seeing anything on CD-ROM
- I did the CD-ROM, thought it was very good; don't use much because I knew most of the info; gave it a 4 for a good starting place; PALS is also a good system to get documents
- went through Michelle and her assistants to get all information for us
- no organized resource to tell me where to find things
- already given me one of the CDs with the post flight reports; really worked well
- good websites
- good information there
- been looking at some of the material today, some useful, some data, found an external source, don't know how to get back to it
- for CEO haven't really used any; as PD, have used websites for schedules; used more MOD sites; used often is Lead Increment Scientist Status Reports; John Uri sends to RPWG and sends on-orbit status to members, other RPWG info is very useful

7. Survey Part 2 Specific Management / Functional Areas - Verbal Comments

A detailed review of the response data for Part 2 of the Survey indicated that the majority of the key data relationships and findings for this part of the Survey are captured in Figures 3 and 4 above. For this reason, and other considerations associated with the weaker statistical base for the Part 2 scores, it was elected not to use the same detailed level of reporting for the Part 2 data as was used for Part 1. The remaining key results from the Part 2 questions in the form of the respondent verbal comments are provided below.

Section 2.1 – NASA Payload Development

Please rate your level of satisfaction with the various services and support provided by your NASA Payload Development Team

- HW: some problems with bar code reader, worked sometimes in-flight, sometimes not; crew either loves it or doesn't, some prefer to handwrite; personal bias, was an inventory tool adapted to support renal; we weren't primary developers; could have worked better if we had our own; documentation was minimal since re-flown study

- big picture knowledge early on

- a lot of stuff initially needed, earlier on with Increment 5 budgetary area, cutting down, will we get the money in time and had to do with stuff early on and not a problem with Increment 6

- the NASA Team did a very good job

- documents not well coordinated; there was a fundamental error made on the engineering side; very basic fundamental was made in testing the hardware; details are...some of the connectors had a force probe in it and was so very basic, and should never have happened

- these guys have bent over backwards and gone the extra mile and given all the slips and such, outstanding support on services; processes, sat in meeting and looked over lots of flights and don’t see a better way of doing; people great, got the job done, right people in right jobs for us; very clear each time what we have done in documents

Section 2.2 – NASA Research Program Office (RPO) Project Management

Please rate your level of satisfaction with the various services and support provided by your NASA Research Program Office.

- Code M office here is excellent in this point of time, would not change a thing

people are very good, software they provided, Human Research Facility software, co-development issue; deliverables have repetitive and silly documentation requirements

- documents just had CoFR to deliver

- great support; when EPIM wasn't able to do something, SPD got it done, and quickly

- did not feel at this point the RPO is filling my needs in any of these areas; my main connection with RPO was doing CoFR, actually feeding stuff up to them, dealt with people, and gave them high rating; weren't getting guidance and clarification {unclear}

- our interaction, had a lot of interaction, telecon, sent someone up here and a lot of good interaction; they did an excellent job

- pretty happy in general; no unreasonable requests of me; like the people and like dealing with them, good experience

- timelines not so much produced by RPO but support lent; people very knowledgeable

- Hardware: BDC collection; Documentation: not a lot of documents to me, but some

Section 2.3 – Research Planning and Integration

Please rate your level of satisfaction with the various services and support provided by Research Planning and Integration

- due to short notice between Columbia and landing of Increment 6, everyone did a great job; lots of stuff to be shipped and tested in a short amount of time, cooperation, customs, etc; very busy intense effort for 3-4 weeks

- don't understand some processes; people, don't have good idea who rep is; unfamiliar with their docs and deliverables, not getting anything out of that; not sure if I'm delinquent, should I take more of a role, or not; don't understand their role {unclear}

general feeling, can't point to anything that I thought was wonderfully good or needing to be improved

Section 2.4 – Mission Integration

Please rate your level of satisfaction with the various services and support provided by Mission Integration

- change process needs to be streamlined; have some very excellent people; if they could move PIMs back onsite, would be good for everyone; communication much more difficult since they are in Boeing building a few blocks away

- good support from PIM; way CoFR is laid out now is better, info they're asking for at such a late date, should build into process more specific details and some flexibility; some good docs and some poorly written docs, some has too much, should be {unclear}

- not a lot of integrating, CEO was up and running, things went smoothly; processes: early on we wouldn't get notified of some changes through the operational flow, e.g., extra burns, etc, but that changed as Increment 6 went along, so communication got better

- really enjoyed working with Juliette; this set rating PIM primarily, also PTP; here is where I start to get a little bit less than totally satisfied with early requirements for deliverables and documentation we're asked to do

Section 2.5 – Payload Engineering Integration

Please rate your level of satisfaction with the various services and support provided by Mission Integration

- documents, especially with the EXPRESS rack stuff, could not find the documents

- similar comments to mission integration

- no software or hardware

- the same stuff as before, felt overburdened by providing useless verification data, had to submit paper for common sense items, find it ridiculous to submit paper where it is N/A

Section 2.6 – Operations Integration

Please rate your level of satisfaction with the various services and support provided by Operations Integration

- iURC contact very good and good to capture requirements for overall planning process

- not many changes, mature flight, didn't have to do much, carried over from Increment 5 to

Increment 6

- deliverables were excessive

- MSG provided crew procedure engineer, and lead ops person from MSG to provide info to iURC

- software tool refers to onboard software, the computerized procedures are extremely bad at integrating graphics, and so bad that they are unusable that they could take a minute or so to come up on their think pads, and such a barrier to the crew and slows them down; been my experience that the crew prefers graphics

- concerning procedures, felt template was a little too soon, should have been closer to flight, did not jive with hardware development

- with ease of integration of input into OSTPV and reporting info back from OSTPV to PD, could be smoother flow

Section 2.7 – Real-Time Payload Operations

Please rate your level of satisfaction with the various services and support provided by Real-Time Payload Operations

- Increment 6 people very good, very flexible, did not appropriate hassle, only when appropriate; software tools, not great

- the reason I went to 4 on services, tend to get to stage mom effect, people ask a lot of questions, maybe if they understood the payload they would feel more comfortable; tend to ask too many questions

- Cadre members who are insightful and helpful and then there are those who are not helpful, and you cringe; Cadre people inconsistent; software tools, DSM, in particular, is very useful tool for DHS, works great for use; Cadre communication is getting better, but too personality dependent; not changing all at once; phase-in is working better, than all at once; DLS position, not always clear what their role is in supporting real time ops, consider them eyes and ears, and pass on stuff to payloads, and sometimes does not get passed on

- deliverables downloaded bar code reader delta data files from ISS thru OZ and sent to me and worked very well

- deliverables extensive, things that could be done once

- overall satisfaction is very high, deliverables gets a 3; daily science report, did not know that there was a template until almost through with this, would have been nice to know that information, got no guidance on specifics; Cadres' shift change, and inconsistencies between shifts, and dealing with lots of different people; if an OCR has to be submitted for the payload, think that the payload should be consulted, a one time instance; times when a higher priority activity must occur, when a payload is going to have a run cancel, or postponement is made, that there be notification to let team know; Cadre knows object is science and they will get best that they can

- more than just Lead Increment Scientist, but POIC prominent; Helen's comments: has improved through Increments and do rely on pro-position; POD-position does or doesn't make us aware of OC; some functionality taken away; what Lead Increment Scientist and Cadre position tells us is often conflict

- people: some of the Paycoms get in the way

- documentation: there was no published procedures for uplinking files to station, created a major headache in my life with Increment #6; trying to uplink from HR facility

- processes: sometimes notifications of changes were slow; don’t do own OCRs; documents same OSTPV comments as previous question

Section 2.8 – Payload Safety

Please rate your level of satisfaction with the various services and support provided by the Payload Safety Management Area.

- would have helped me if I had known to find additional info on the JARSWG

- processes were flexible enough, but not enough people in chemical sciences, lack of knowledge gave them hyper-conservativeness

- these comments pertain to the safety measures partaken primarily in Russia

- the ground safety data package for KSC, seemed very excessive for payload; my understanding is that they have visited some sites and it appears that they will streamline

- deliverables haven't changed much from Shuttle days

- clarity is needed as to what is required and defined in a safety data package

Section 2.9 – Payload Physical Integration

Please rate your level of satisfaction with the various services and support provided

- support was excellent in DHS software, testing schedule was not good, selected to support US Lab and was having trouble getting far along to test and then cancel at last minute and call at 4am and then go home; I understand complexity of that beast, but feel could have a better plan on testing for the lab; overall KSC was very positive and helpful, powering up your payload and checking as it warms up

- two deliveries for STS-111 through MSG at this point and many activities through them; STS-113 worked with the KSC person; comments directed through STS-113; individual we worked with there was very helpful, kept us apprised; very good

- delivery schedules closer to launch

8. Columbia Mishap

Please rate the extent to which your investigation was directly affected by the Columbia mishap.

MANAGER'S TOOL BOX

NOTABLE FINDINGS: Nineteen percent (19%) of the Increment 6 interviewees did not experience a significant effect from the Columbia mishap and some respondents commented that they benefited from being on orbit longer.

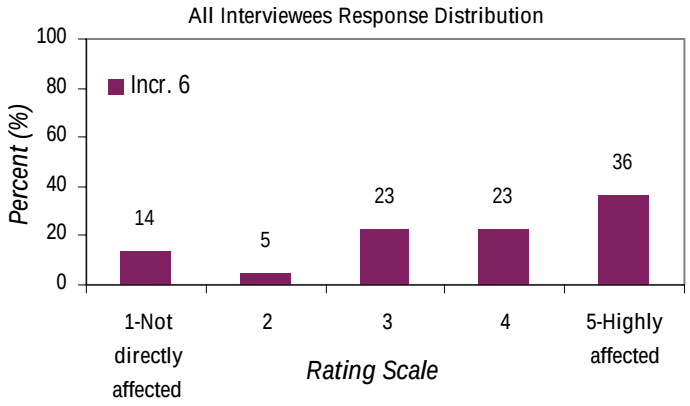
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
N / A	N / A

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: N/A
Satisfaction Ranking: N/A

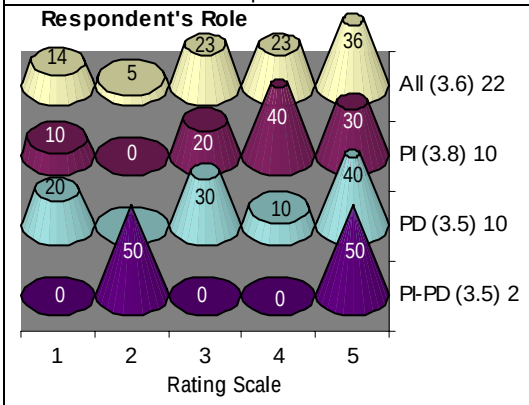
INCREMENT COMPARISON: N/A
Comparison Index: N/A
Comparison index ranking: N/A

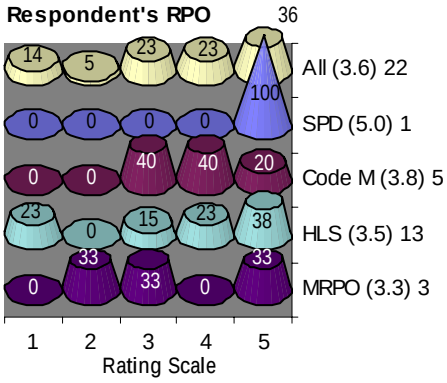
Response Descriptive Statistics

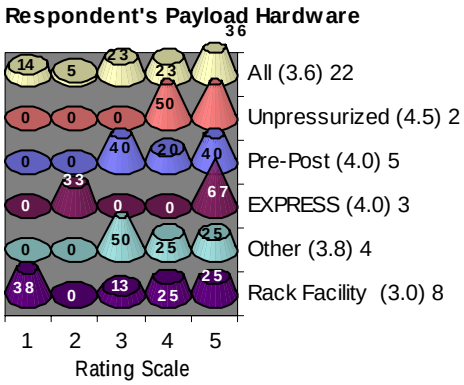
	Incr. 5	Incr. 6
No. respondents:	--	22
Applicable responses:	--	22 (100.0%)
Mean score:	--	3.6
Scaled mean score:	--	65.9
Mean score Δ:	--	--
Standard error:	--	0.30
T-test:	--	--
Chi-square test:	--	--
Median score:	--	4
Skewness:	--	-0.77
10th percentile score:	--	1.1
% not affected:	--	19%
% affected:	--	59%

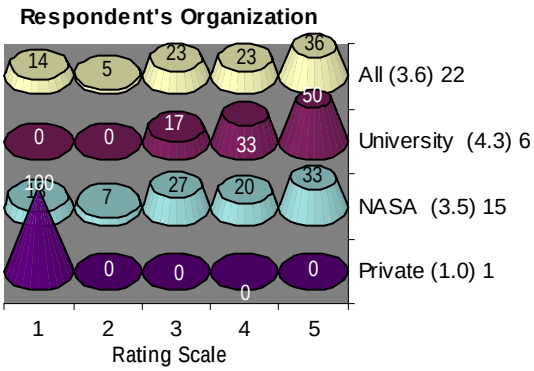


Demographic Trends (Summary): Seventy-five percent (75%) of the respondents indicating they had little or no direct impact from the Columbia mishap were from the HLS RPO.









Question CM – *Comments*

- the re-planning that had to be done, we were planning to do ops on Increments 7 and 8, but due to accident we couldn't do that

- well, the requirement, ahh, I base this solely on the requirement, the requirement was for 1 year on-orbit, and currently we are at 2 1/2, and Columbia would have brought us down to 2; we have temperature data loggers onboard that have run out of memory storage space and have in effect shut off; the data in them will not be lost, but the fact of the matter is that they will not be recording temperature data for the entire time that they are on-orbit, that is one of the requirements, so, there is impact

- impact that the crew to us was not altogether bad, originally only 4 months and from our terms a little short, gave us longer orbit; brought crew down in Russia, post flight data collection and had to go to Star City so some what limited collection {unclear}

- we did have to respond for a request for more science, last minute planning; are we highly affected? yes, but no big deal, just had to plan and have folks put into action; we can insert another operation in our schedule; gaining science; extra science at our leisure

- some SAMS sensors getting to end of their calibration life and can't come down; not major impact, from statistical database sense, and not able to do that, this is on SAMS and no effects on MAMS

- just due to landing in Russia and some loss of diet data; data will be affected but I don't know how much yet; where they landed in Russia vs. here in USA; post-flight data vs. in-flight data; samples came down in 5S

- negative affect; crystals are slowly dissolving because we can't get them down; de-integration problems due to Soyuz processes; big science impact

- our requirement is to get R+0 data, but without KSC landing we can't get R+0 data, so highly affected

- our hardware will remain at Station longer than anticipated, no problem; flight data, the delivery to the ground is delayed, real-time download and data, a lot to work with in the meantime; operations have occurred over a longer period of time and may be to our benefit

- one thing we were originally concerned with is the size of the crew, i.e. 3 versus 2 to do sciences; and two, our latest concern, despite the size of the crew is smaller, because of the size of the crew, and non-availability of items going into orbit, crew should be able to do more crew Earth observation; Charlie Precourt to see about expanding this opportunity to do more crew Earth observation

- affecting our ability to change sensors out, will affect my budget, were hoping to upgrade ICU soon

- all our post-flight work was affected; we had to go to Russia a lot to Star City and set up a lab there, had to set up a total duplicate lab there, actually went very smoothly, but took a lot of time to go over there last winter or spring, set up a new lab, test the system, and then next Increment and the shipping and another lab; we got all the data and very heroic

- I don't think that we were affected at all and will be in the future; there has been a decrease in EVAs, mishap put this back; we weren't going to be on Increment 6 originally; we had enough EVAs to give us good data, the mishap has a longer term effect

- we were supposed to be retrieved and new PECs back up; extended exposure is possibility; we don't get the one year exposure, availability of data is delayed; delay has caused better lifetime data than otherwise

- I benefited from extra time in orbit; got more science; and has more science and has had impact on subsequent science; and has impact on subsequent science on upmass; both positive and negative effect

- we were able to collect samples in Russia; when launching from Baikonur, many problems in time; 5 days from Star City to Baikonur and customs issues to get our samples back; affected, but job got done

- due to the Soyuz landing in Russia impacted our post-flight data collection; on a different investigation because of crew, we were able to get data collection on day of landing; but landing in desert, is a day later or so and affects us directly {unclear}

- I am dealing with a reduction of overall sample size; did not want to do the measurements in Russia, not quality of what I could get in Texas strongly opposed, and organization eventually agreed with me; provided data on it, in the end reduction in crew members, now have two crew members, and now with landing in Russia, slows down data acquisition rate, went smoothly effective before Columbia

- not directly affected, did data collection 7 days afterward

- our Investigation became more highly visible because it required no upmass or downmass; because it didn't require this, we became highly visible and could gather a lot more data

- hard to say 3 or 4, would say 5 if I had experiments [which] were totally lost; effect we had was going over to Russia to do BDC; there were experiments more adversely affected than ours requiring more hardware support in Russia; this involved one of {unclear}

9. Open-Ended Feedback

The Increment 6 Survey collected focused, thematically-directed verbal feedback using the same methods employed for the Increment 5 Survey. The Increment 5 open-ended questions regarding Program Strengths and Weaknesses and Lessons Learned were retained for the Increment 6 Survey and were supplemented by an additional question that collected verbal feedback on Satisfaction Factors.

9.1 Satisfaction Factors

The Increment 6 Survey asked respondents to provided verbal responses to the question: *What three aspects of the ISS Utilization Program would have the highest impact on your overall satisfaction if they were improved?* The goal of this question was to use open-ended verbal feedback as a tool to identify the service and product areas that are the most significant drivers to overall customer satisfaction within the ISS Utilization Program. The aspects identified by the respondents, referred to here as Satisfaction Factors, are tabulated below with their supporting comments.

After initial editing for clarification, the transcribed Satisfaction Factor verbal feedback was subjected to a Pareto-type analysis that classified the Factors into more general topic areas and then counted the number of Factors within each area. The results of this analysis graphed in Figure 6 show Service and Support as the most prominent general topic area, containing approximately 20% of the Satisfaction Factors, followed by a diverse group of other general areas with no particular area being dominant. The diversity among the general topic areas is mirrored by internal diversity of Satisfaction Factors within the general topic areas themselves. The overall findings show no particularly dominant or over-riding satisfaction drivers based on the verbal feedback obtained.

Satisfaction Factor	**Comments**
Satisfaction Factor 1	
- schedule	- would help if submittal dates were later in the process flow
- Change Evaluation Form process	- reduce number of boards, panels depending on what change is; had to go through 3 different meetings and different boards; should be one person you consult to get to make change, then bring to board, now it drags on and on
- reduce time to orbit	- reduce the life cycle time of the project
- Cadre consistency	- personality dependent instead of roles or guidelines dependent, not just Marshall, example had been directed that had to use on weekends, and had been going on for 2 years and had to jump on it and make change, and now have to submit an OCR if we have to make a command on weekend, talked to the POD, what is going on, one of the PODS we are not going to go to Flight Director if you are not going to the command windows all the time, and did not want to rock the boat
- crew access (training and BDCs)	--[no additional comment]

Satisfaction Factor	Comments
- single point of contact	- having a central person who could direct us one time to the ability to quickly get an answer
- process overview	- getting a leg up on the big picture of the whole process start to finish; not sure if there is one place one can get this; not aware of whole process for CDRs, PDRs, review process, educating the PI on that whole process
- overview of information	- single point of contact
- crew training	- more briefing time
- Payload Data Library	--[no additional comment]
- Russia/NASA coordination on crew activities	--[no additional comment]
- education and orientation of PIs	- {concerning} program requirements
- ISS Infrastructure Support for Materials Exposure	- respondent thinks ISS Program should provide an on-going facility for materials exposure
- faster start up times	--[no additional comment]
- closer adherence to planned schedules	- for planning purposes
- PIM support	--[no additional comment]
- PIM interface and functions	--[no additional comment]
- communication - cleaner lines	--[no additional comment]
- Russian integration	- interface negotiation and I will comment in Lessons Learned, educational information on Russian Integration
- making it easier to enter flight info on the OSTPV	- like a timeline from the crew; daily uplink to crew nothing like it from ops, have to go in and manually input, very arduous, would help everyone to get this info directly input to crew, right now they just read our messages, would have {unclear}
- continuity of the PIMs	--[no additional comment]
Satisfaction Factor 2	
- training	- would help if training were later in the process flow
- providing single point of contact for getting through the mire	- big issue, minefield out there, and valuable resource is someone who can guide through

Satisfaction Factor	Comments
- communications	- consistent means to deliver information to payloads; got to be a better way to get information out to everyone
- science session to review with crew	- questions we could answer, hardware they could see, something closer to launch, everybody would like that
- crew interface	--[no additional comment]
- interface to crew on orbit	- little more systematic comments in a more formalized way; driven by task to be performed
- POWG:	-old POWG back in SpaceLab days, payload ops working group; those groups were way diff than how POIGs are run; more science centered for mission; at an Increment level; scientists and researchers are telling what they need from their standpoint
-coordination with ESS and Lead Increment Scientist Cadre	--[no additional comment]
- hardware development requirements stable and more transparent	--[no additional comment]
- better overview of procedures and documentation for first time flyers	- have learned a lot but in a random fashion, from lots of different ways
- return to 7 crew members on Station	- with a 7-member crew, a return to higher science situations, because I think that when they figured it out, 2.5 man hours of 3 was just to clean the station and that left a half of an ME for science to get done; I think again the return to a 6 - 7 member person crew...that would have a very high impact on our stuff in terms of getting a larger in and quicker and the visibility of science would jump quite a bit
- reliable tracking and input of experience	--[no additional comment]
- reduce the bureaucracy	- Program got rid of PIA, now in multiple documents, so more difficult, no single point of focus
- better on-going review process	- feedback on the science, once a year symposium, and more opportunity to meet
- system for tracking available Station support equipment	--[no additional comment]
- payload process documentation and access to it {unclear}	--[no additional comment]

Satisfaction Factor	Comments
- ease of documenting requirements	- seems to be requirements for documentation detail, for level of detail of payloads that comes at a very early date that I think is a little bit far out, early to be needing some of the details of mass, volume, part numbers, counts of things we sometimes are asked to supply
Satisfaction Factor 3	
- PDL and other tools	- non-applicable information in PDL and other tools that we cannot easily gain access
- have one person assigned to each payload, get quick answers	--[no additional comment]
- information flow:	- I don't understand how info should flow up and down from nice path, have to get things thru grapevine
- coordination between Med Ops and Human Life Sciences Ops	- they need to set priorities and coordinate with scientists
- hardware development approvals	- went through steps and thought we were approved and another area would say no and look at it again; a group has not been previously involved and thought this experiment was necessary
- reinstatement of life sciences on-orbit hardware	--[no additional comment]
- more co-ordination between Headquarters and JSC	- feel that Headquarters is a distinct world, both are two separate NASAs, common team work
- work with safety on what's really required for GFE hardware for the payloads process {unclear}	- you'd be amazed at amount (prior to Increment 6, still going thru with 7-9) of h/w since STS-88, still requiring systems stuff; when a payload calls out GFE equipment in their safety data package

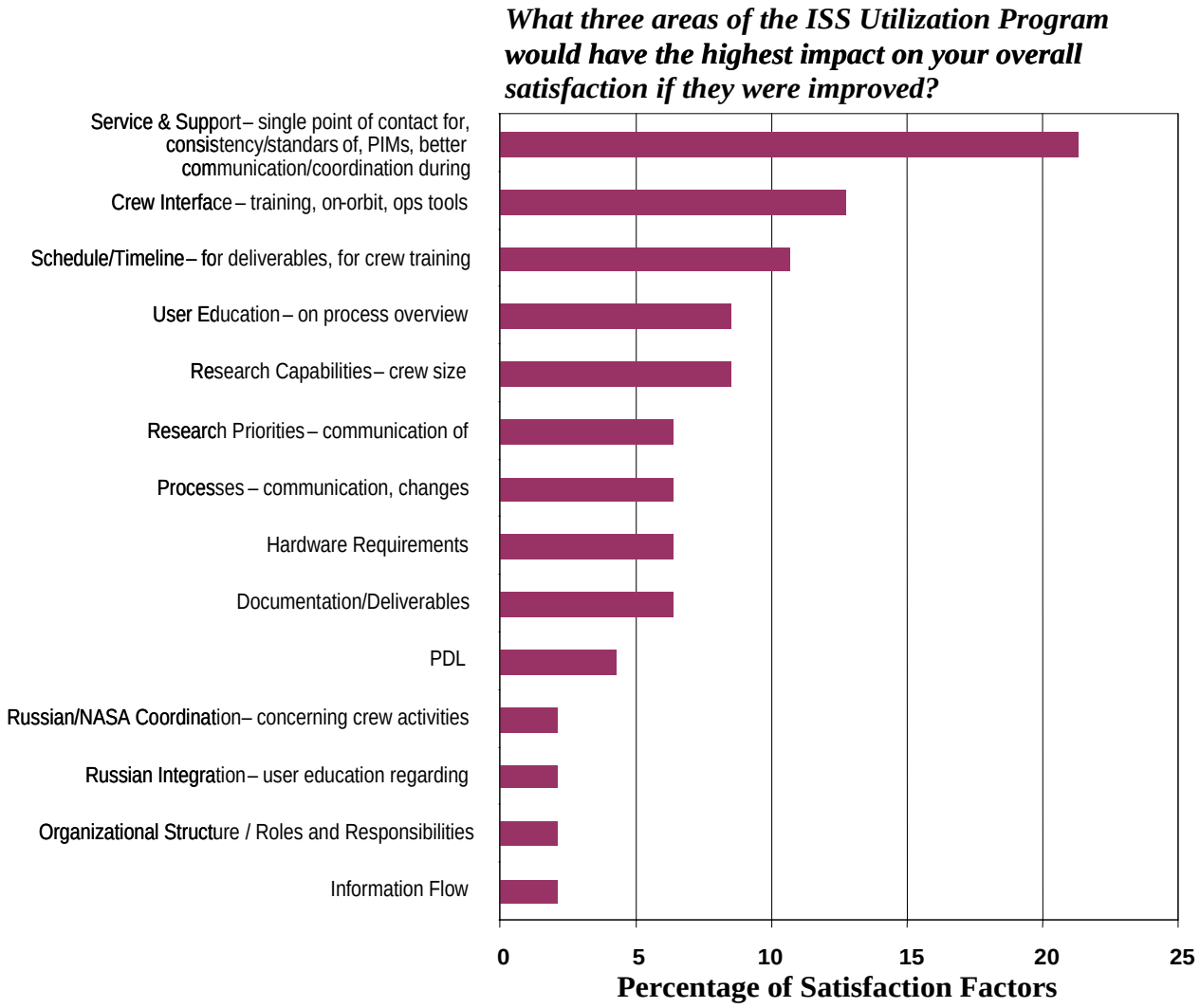


Figure 6. Open-Ended Feedback – Satisfaction Factor Pareto Analysis Categories

9.2 Program Strengths and Weaknesses

Both the Increment 5 and Increment 6 Surveys asked respondents to answer the questions: *(1) What are the major strengths of the ISS Program? and (2) What are the major weaknesses of the ISS Program?* The more general term of ISS Program was used specifically to expand the question scope beyond the ISS Utilization Program, but interviewees were reminded not to neglect the ISS Utilization Program as a subset of the entire Program in considering their answers.

The Increment 6 Strengths and Weaknesses verbal responses were transcribed, compiled, and analyzed using Pareto methods similar to those used during Increment 5 (see *Increment 5 Final Report*). The Increment 6 Strength and Weaknesses Pareto results are graphed with comparison data from Increment 5 in Figures 7 and 8. Transcriptions of the comments on which the analysis was based are provided at the end of this section.

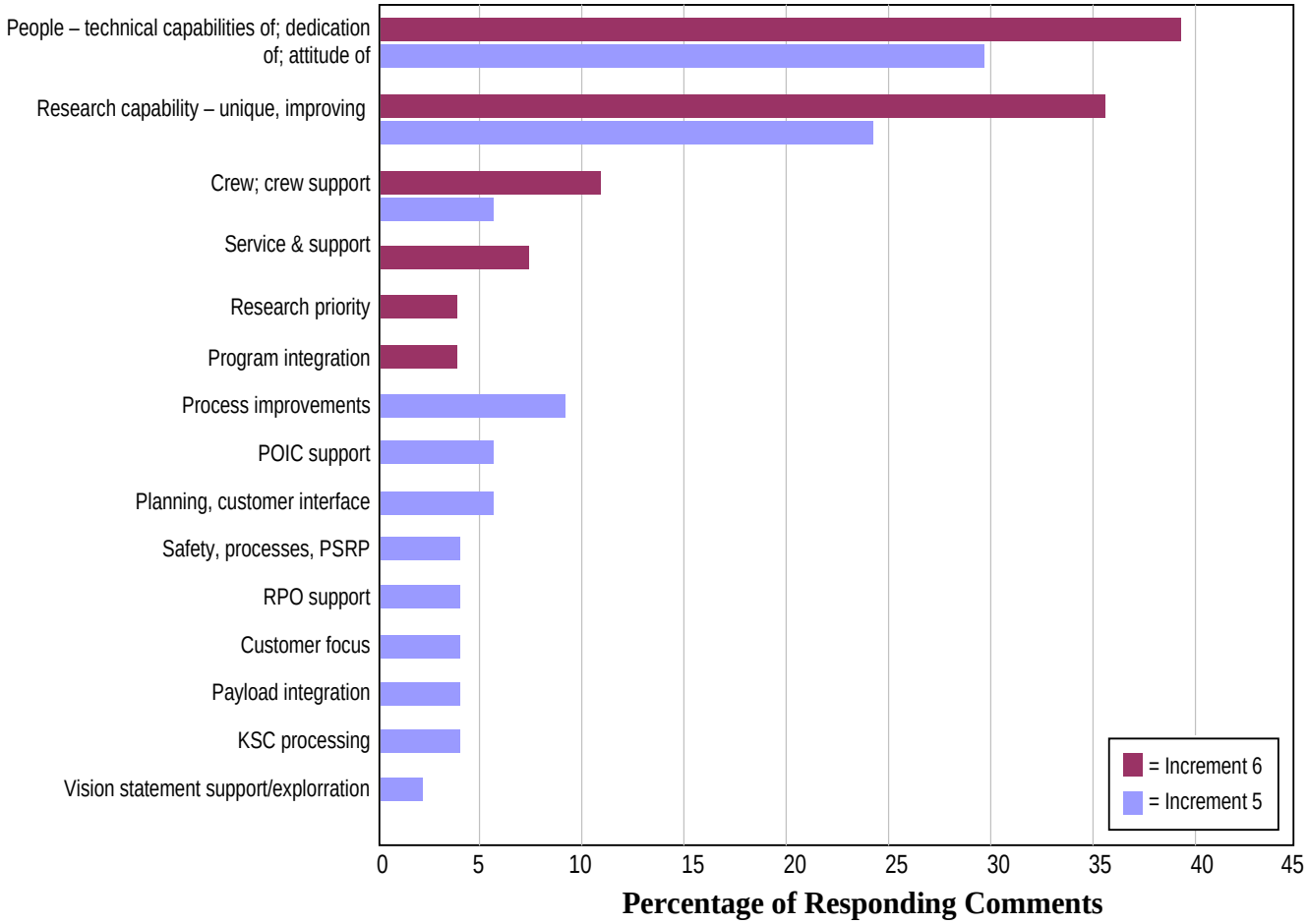


Figure 7. Open-Ended Feedback – Increment 5 and 6 Program Major Strengths Pareto Analysis Categories

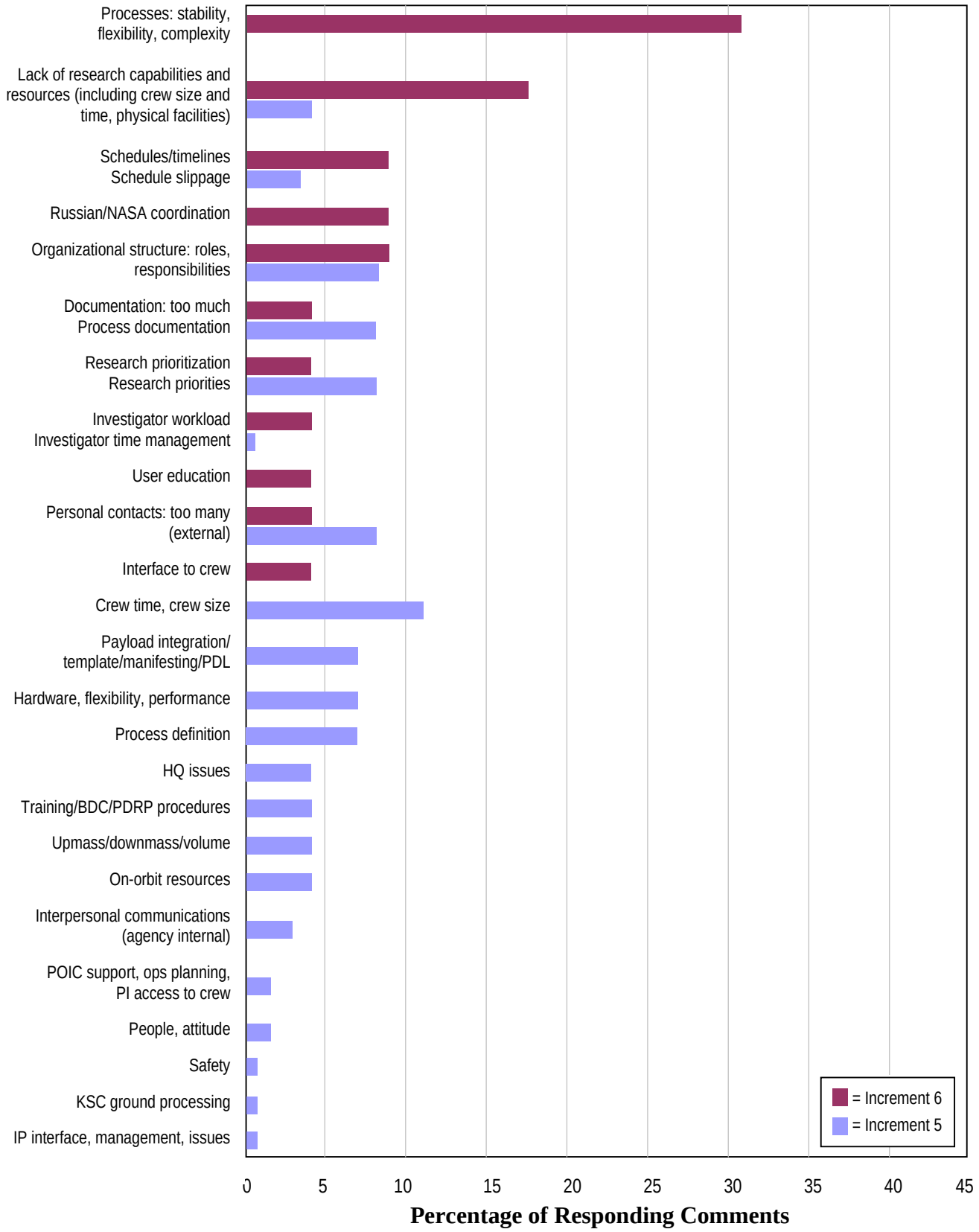


Figure 8. Open-Ended Feedback – Increment 5 and 6 Program Major Weaknesses Pareto Analysis Categories

Program Major Strengths – *Comments*
- coordination, the Program has lots of elements to pull together into one cohesive unit; Program does a good job of getting that done
- it is on-orbit, there to collect data; good platform; some things that need to be provided to payloads yet but as Program develops, will get to where it needs to be; it is a growing process, ISS is growing where it needs to be growing
- folks are the major strength, vast majority of people are enthusiastic and positive; major weaknesses are time to orbit issue, complex bureaucracy; and the people help you get through it; interviews are a good idea
tremendous platform to look out for very small payloads
- great resource for conducting microgravity research; takes long time to get approved, funded, flown and results; if time window were reduced, would help; if you have phase II could be couple more years in the queue, think could be shortened in time
- people, some real good engineers and scientists and a really good team effort; science objectives met because of strong team
- has a very unique capability you can't get anywhere else; credit to all NASA folks, despite all whining, never saw more dedicated folks who want to do right thing but system ties them up
- I think that one thing that strikes me as a real positive, I mentioned this maybe before, but I think that I will emphasize it again, the folks that we have been working with on the HLS Team; some of the engineers who have been working with us on developing our visual display system, have really done a great job with developing hardware in terms of, again like I said, adding additional value to it; not just implementing our requirements, but asking the right questions and making it better than we actually initially thought it could be; you know. I think that is a real strength, cause you get a bunch of creative people in here, we are not just saying this is what you want, but then they are probing and saying 'Can we do it better?'; which I think is a very positive thing, you know, it is not just implementing your requirements, but it is asking the questions that can make it better than it was when we first wrote it up in the proposal, I think that should be encouraged; this is a real collaborative sort of creative process, and a lot of people with a different ideas; and, it goes both ways and we are sensitive to those ideas too, but, I think that at this part of the process, hardware development, I am really pleased by that aspect of it and the willingness to break a few barriers and look at some things a bit differently
- ISS is national resource for long duration for experiment; enables exciting research
- from my perspective the major strength is focusing on getting science and making sure that good science is going on, despite what we read in the media; communication has improved and processes is in process of improving; the Help-Line is a major strength of the program, and an example of improvement
- still the one of a kind platform we're flying on; the ISS, the Shuttle, the great support people who support the whole thing; even though we are critical here to make perfect Program, we're all working toward common goal; terrific to be part of; this {unclear}
- without the ISS there would be no space biology research, for long duration flight, critical research; individual components; my support personnel was highly knowledgeable both here and in Russia, educated themselves to be good interface; zero support in Kennedy; and at Star City was exceptional; got work done even though crew got back late, part of that was due to cooperative crew
- the fact that you have trained astronaut crew who can conduct experiments, enthusiastic crew, is a very important part of the Program; Human Life Sciences need human subjects; team we dealt with has been very supportive and excellent
- I think that the strengths are that you have human presence; so you have the ability to make observations and do some reasoning, and get some interactions; in our case they are simply pictures; but to deal with things that you have not planned on, unexpected

- obviously access to unique experimental environment; most of the people are a tremendous strength; Human Life Sciences strength of holding hand of the PI and making things transparent is strength; web interface is very efficient and fast data from experiment within 36 hours
- have really good personnel in spots that they need to be; boards are really good; wealth of information and talent onboard to get experiments done; major strengths is the people; going forward with the flight studies, after Columbia, and going forward, and pushing on (is good)
- personnel in Program committed to it and achieving maximum research as possible; we complain a lot but it's obvious folks are trying to get as much for us as possible
- up front I thought they made a pretty good effort to educate us and help us get through documentation process; I was pretty happy about that and the resiliency of the program; within days after were pulling it together, kept things going; I had an outcome with my data that made sense, Program kept its head
- being in space; major assets: driving technology to do spaceflight a little bit better, provides access to space in ways unmanned vehicles can't; fact you can take a payload up and return it is a major benefit
- the people, I work with lot of dedicated people who really want to see things succeed and for the most part who make that work to happen; when I look at the major Weakness of ISS program {unclear}

Program Major Weaknesses – *Comments*
- bureaucracy, turning into another SpaceLab organization; everyone has their fingers in pie and takes too long to get things done [RC: increasing?] yes, increasing rather than decreasing
can't think of anything off-hand; always something you could do better; this Increment went really smooth in-flight; would like to see Science Review, would really have helped; some constraints if crew is not in this country, though, one last opportunity
- learn system better, know PIs and PDs have much to do; too cumbersome and too complicated; keeps changing, keep hearing it is going to get better; changes doesn't percolate through system; educational process needs to be better internally and externally
- it just takes so darn long to do anything right, but not a definitive fault, because it is inherent in system. But to be honest, I think it could dissuade a lot of people who are not sort of the true believers, you know, in that sense. I 'm here because I said, I want to be and I want to do space science. I can imagine if you are sorta on the fence and if you could do space science and you could do other things too, you might just be overwhelmed by the amount of overhead it takes to do it, you know, and particularly like I said if you weren't here physically here to go to all the meetings and to do the data collections, frankly speaking, if I wasn't physically here to do all the support that I do every day to support the project, I am not sure if I could do it, you know, given all the travel and everything it entails, it would be incredible
he ISS processes are so loaded, needs streamlining; so large and complex, lots of documentation, necessary for ISS; links you were telling me about sound helpful for new payload developers
- the inability of the Utilization Program in instance of the Columbia mishap, in case one group cannot utilize, maybe another group can jump in and propose to utilize, better with planning contingency science
- disjointedness between Utilization groups, has gotten better; but need to approach things as team not as separate little groups; would notice info and communication flow not going down to right people; the Program has tendency to over-complicate everything

Program Major Weaknesses – *Comments*
- well, I have already mentioned them in other those other comments I think, the lack of coordination between NASA and Russian management; I think that it is an issue that relates to research, and needs to be; I don't if it's a lack of coordination or the lack of ability to do anything about it, but, at any rate, it's affected science; Ahh, we are getting inadequate data from some of the Russian crews, they are reporting but not doing ... (length of silence) oh, I am sure that it is effecting other research as well; but lack of coordination, and the other things that I mentioned before; I think the medical ops and the basic research need to coordinate better and I think that they have improved from Increment 5, but still are needing more and can improve more, and that is the major, ahh, from my perspective
- NASA huge organization; very difficult as one person to understand the overall requirements and trying to get an experiment done; people we have dealt have worked with, worked very hard to overcome this issue
- the complexities of a manned vehicle; they don't have ongoing established infrastructure of exposed materials in space
- has taken 7 years of my life to accomplish; could have been faster; documentation and flow of information is worth another mention
- communication, in the Program there appears to be some overlap where some people have the ability to say Yes or No, and have the ability to affect the experiment; there is some redundancy; this is understandable in safety, but in general Mark Anderson has been very good; he has done a really good job of taking care of communication; channels need to be clearer; boils down to communication and chain of command kind of thing
- have two independent science programs, us and Russians vs. having one integrated program with one group in charge; not always enough crewtime/crewmembers to accomplish what we want in allotted timeframe, but that is the reality of constructing the Station
- bureaucracy
- poor lines of communication; parallel people at JSC, one guy does not know what other guy knows; and highly paid folks doing something that they don't need to be doing; and more common ground with Headquarters and JSC
- for whole program, not planning far enough ahead for another vehicle; depending on having Shuttle for so long and not planning to replace it; it's very restrictive; because there are men on it, so many design restrictions; amount of space you can use; still bugs as far as process flow but being worked out
- inability to provide a 2 or 3 man crew; hard to do science when they are involved with building and maintaining things {unclear}

9.3 Lessons Learned

Continuing the approach used in the Increment 5 Survey, the Increment 6 Survey asked interviewees to comment on their Lessons Learned, which were defined as either: (1) application of successful methods to deal with problems, (2) mishaps that occurred for which the causes were determined later, or (3) the identification of a process or design that could reduce or eliminate the possibility of a problem or failure. The as-received Lessons Learned comments are transcribed on separate pages at the end of this section. Preceding each comment in bold brackets is a summary sentence or phrase that has been added in order to capture the main point expressed by the respondent.

A review of the Lessons Learned comments was conducted to see if they contained any recurring themes or issues that might be addressed through the ISS Payload Office ongoing corrective action process. In general, however, the comments note a diversity of subjects that did not

coalesce into any identifiable trends. Taken on an individual basis, two of the Lessons Learned cited issues that had already been identified from other feedback in the present Survey and that had been recommended to OZ management for corrective action.

Lessons Learned – *Comments*
[double-check POIC's understanding of your operational requirements]- on this particular program, once we got everyone to read requirements, we now get our pictures without having to ask for them, film comes down; make sure you send note to ops guys in MSFC if you have a requirement in the Annex 3 in-flight photography book
[no feedback]- don't have a lot of lessons learned from Increment 6, maybe just a learning curve; very steady progression, really went remarkably well
[OZ support and accessibility are improving]- the greatest thing that I have experienced is the improvement in the PIMS, the newsletter, it is like OZ now is no longer behind the door, the door is open
[use KSC payload testbed facilities efficiently]- experience at KSC, from point of view that can run through simulators, pretty high fidelity system that they have there, etc, biggest thing is don't treat it as though we need to verify all of our commands and telemetry, and think that people should be prepared to utilize all that time; use KSC time wisely and check out as much as commands, ground systems and telemetry as KSC will let you; for instance, fixed couple of problems with commands, so time well spent
[no feedback]- was smooth Increment for Renal; nothing we learned from 5 or 4 that I would add that would change anything
[importance of PIM services and crew interest]- Program really needs a PIM and a high quality PIM, and needs to be rewarded, program is very complex; if crew doesn't get involved like Sox did with me, then science will take a big hit, if crew is not legitimately interested, science will suffer
[adapt research approach to fit ISS capabilities] - learn to be flexible, doing science on ISS is not same as doing in another environment, not everything is in our control, but you can do quite a bit with what you have; be able to design experiment to accommodate things unique to ISS; our current try
[need better coordination between POIC Cadre and payloads on ops changes and activities]- OCRs related to payload should be submitted by payload or at least discussed with another member of the Cadre, so payload is not surprised; rescheduling by member of POIC should be discussed with the payload when that decision is being made at the time; re-planning activity can be confused when that happens, if cancelled for Tuesday run, and then Wednesday, paperwork issue and people confused; provide a template for daily summary and topics for the DPC; wondering if a periodic teleconference (during Real-time ops) between Cadre and payloads, progress of experiments, revisions, etc; maybe Cadre can provide suggestions for changes...two-way street; Don Petit was seeing stuff that no one else was seeing
[allow and promote innovation by crew] - to interact with the crew, in terms of innovation, example is Don Pettit's nighttime observation; just tell crew what you what, and then let them innovate; big lesson learned in my business; similarly useful when WORF is up there
[Program should mimic SpaceLab POWG approach to payload ops coordination] - we kind of already hit on them all, sharing of data through PDL; see POWG like we did through SpaceLab since we have separation with RPWG and POIWG; should have joint meeting to act like old POWG did; don't think I'm sole person out here saying {unclear}
[anticipate, plan for, and take steps to mitigate problems with shipment of items to Russia]- the main thing regarding our experience in Russia was shipping things in and out of Russia; especially getting our sample back we found out when leaving Russia, not only have paperwork in hand, but have a really good translator who speaks both English and Russian; and had some problems leaving Russia, shipping over; had some problems shipping chemicals over in a timely fashion and think that this is OK now and since we are going back for Increment 7 this is an important lesson

Lessons Learned – *Comments*

[don't use initial negative experimental results as rationale for early return of a payload; understand timescale needed to determine experimental success] - on Increment 6 we did not learn anything more about the process, we had been on enough Increments; the main thing we learned was the value of continuing with an experiment even though kind of negative results at first; had been a number of people who said we will take equipment back and don't need to do any more experiments; can't necessarily know how long to do an experiment and can't pre-plan; tendency to plan and really doesn't work that way; we did learn, at beginning of developing the hardware, needed better definition of requirements, and a bit naive at not having worked with NASA before; making sure of hardware development and making sure of time scales up front; can change things drastically

[design experiments to minimize interface with vehicle and crew as much as possible] - with experience, we have learned we have minimized interface requirements with the vehicle and the crew

[connector damage due to improper probe insertion] - probe was forced into a female connector socket, actually many sockets, deformed the connector and had unstable connection, and was not realized until this was in place, this happened at JSC; do not know if investigated to his knowledge; issue of slow accumulation and unsystematic collection of information could have been accelerated by a PI initiation program

[build adaptability to changing ISS capabilities into your experiment design]- My first advice would be to make sure you are very flexible; I think again being that the ISS is sort of, we had big thing going up, and I am just talking about the program in general, how we had this and it was to be a 6 to 7 member crew situation with lots of science going on, and lots of hardware going up toward that and then we had to take a large step back to go back to the basic module; my thought would be and if I am talking with other potential PIs, that, I try to help them out and say be careful and tell them how to tailor your experiments or what would work or what would not work, in terms of, if they are trying to propose any in-flight type of situation or experiment and what requirements may be there, for instance I know that back when we submitted ours back in '98, and that is sort of when that all came about and I think, from what I heard, ours was one of 17, there were 2 of 17 proposals that were funded to go into the space flight stuff, and primarily the others were all in-flight things that had to be sort of cut out, because things weren't going up in terms of either personnel or the number of crew members or hardware that was needed to support the missions. So, what we have become experts in is certain methods to preserve cells that don't require refrigeration or don't have a lot of special needs, ambient temperature things, solutions, preservatives, and I developed one that is flying on the shuttle to preserve DNA and saliva, so, really it is more in the area that I work, biomedical stuff, how would you preserve the samples in a way that the Program saw that particular experiment, not only is it good science, but it will work because of the constraints around the ISS at this time. So, hopefully that made sense. From my standpoint that is really what I look at, and I target since being a university person, my thought is to help other university people when they come in and they have a big idea, but then you sort of feed them the reality of here's what can be done and why and limitations and can you go back and redesign your experiment a little bit and make it feasible. That is what I tend to go towards {unclear}

[get your Station support equipment launched as early as possible if it is not already on orbit] - we turned in official lessons learned, already reflected in that, acknowledged by Program; hopefully will go away, if you need to use any Station support equipment, best bet is to get from Program ahead of time and launch early if you can

[no feedback] - submitted previously

Lessons Learned – *Comments*
[investigations should design their data sharing plan and IRB approval such that they can accommodate future expansion and changes into their experimental objectives and requirements] - the main piece of advice to new investigators coming on doing studies with the crew is, don't focus, is to pay special attention to the data sharing plans and the IRB, that the human subjects approval; the reason why is because it is very hard to anticipate all the data you will need, and what I found is that I designed my data sharing plan and my IRB approval to accomplish the study that the proposal that was funded; but, ancillary pieces of information were required down the line and I didn't anticipate those; so that became extra bureaucracy, and extra effort to get those; and, if you could at the beginning when you are getting new investigators in there, encourage them to think beyond their program and think of every piece of information they could conceivably need to support their investigation in the future and imagine how it might evolve, that way they could expand their data sharing plans and other things that need approvals beforehand and then not worry about it down the line, that's to me the biggest lesson and that is the advice that I would give to future investigators
[need better system for tracking Station support equipment and coordinating its inventory and availability with customer requirements; better instructions for uplinking files] - several lessons learned directly related to FOOTE; problem Human Research Facility specific requirements documented in appropriate PRA for Increment 6 that ended up not being on-orbit when we got there; history in this is several pieces of support equipment on-orbit and then found it was returned and had to scramble to get it up into orbit; hand rails, some of the equipment was on orbit, but not available, were being used and could not have them; develop a more reliable system for tracking and determine that enough is available for all users; just recently taken to the PCB; see PCB charts from July Lessons Learned, 6 Lessons; instructions for up-linking files, had four attempts before successful; some data loss, minor, recommend publish for everyone to know how to use; did not seem to be a real defined way for Russian use of (unclear) rather unimpressed with our interface in the Payloads Office; never understood how the process worked, no matter how many times I asked and never saw anything published; eventually we got certification in the Russian segment, if there are documents, where and if they do no exist, needs to be done; went extremely well, got many tapes; good cooperation from crew and the OPS team
[don't be afraid to ask PIM and RPO for support as much as needed] - for CEO we didn't have to use our PIM as much; don't be afraid to ask questions of PIM and RPO continually if you have any
[no input] - can't come up with anything

9.4 General Comments

Part 3 of the Survey contained a final comments section to allow interviewees to mention any issue or topic that they would like to cover that they did not offer earlier in the Survey. The transcriptions of these comments are provided below.

General Comments
- doing away with PIA addendum; OZ has decided to do away with PIA add to streamline the process, the doc was cumbersome but served as agreement with OZ and PD; doing away will take away this agreement, we're a little nervous about it
- I really appreciate the good attitudes of most of the station personnel, for instance, OZ, OC, Gerst, Suffredini...all have good attitudes, working to make things better, dealing with a lot of issues, keep on keeping on, able to maintain a positive attitude throughout it all
- nfrastructure.
- good job, give oneself pat on the back.
- overwhelming experience is very good, excellent
- sometimes during operations, might catch someone on CADRE who was having a bad day...may be isolated incidents.

- very good program. OBPR website had some information awhile back that was good...not just running as a military operation. This survey information is very good, getting it from outside sources. This survey is very good.

- we appreciate what you guys go through for the program

10. Survey Part 4 – Satisfaction with the ISS Utilization Survey Interview and Survey

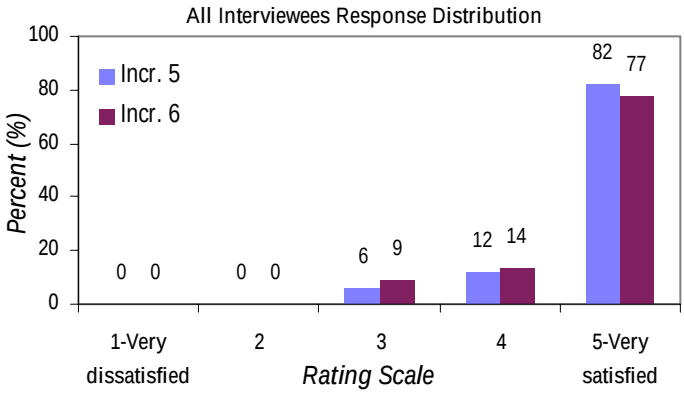
Question 4.1 – *Please rate your level of satisfaction with how the ISS Utilization Survey interview was conducted.*

MANAGER'S TOOL BOX	OVERALL STATUS	
	IMPROVEMENT	*SATISFACTION*
KEY FINDINGS: Respondents indicate a consistent high level of satisfaction with the interview process both for Increment 5 and 6, with no significant change between the two increments.	Neutral	Green

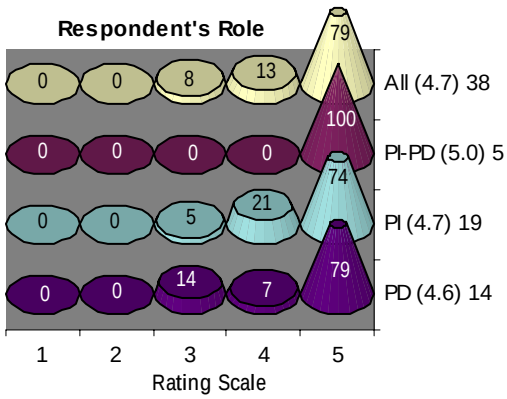
CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING	INCREMENT COMPARISON: *No Significant Change*
Satisfaction Level: Very Satisfied	*Comparison Index:* Not calculated
Satisfaction Ranking: N/A	*Comparison index ranking:* Not ranked

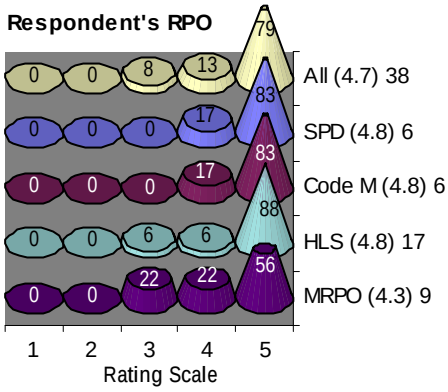
Response Descriptive Statistics

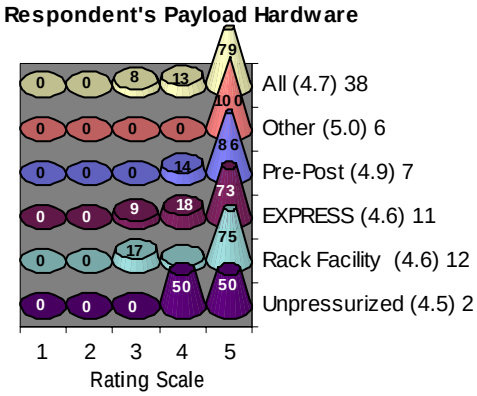
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	34 (100.0%)	22 (100.0%)
Mean score:	4.8	4.7
Scaled mean score:	94.1	92.0
Mean score Δ:	--	-0.08
Standard error:	0.09	0.14
T-test:	--	38.9
Chi-square test:	--	22.9
Median score:	5	5
Skewness:	-2.35	-1.92
10th percentile score:	4	4
% not affected:	0%	0%
% affected:	94%	91%

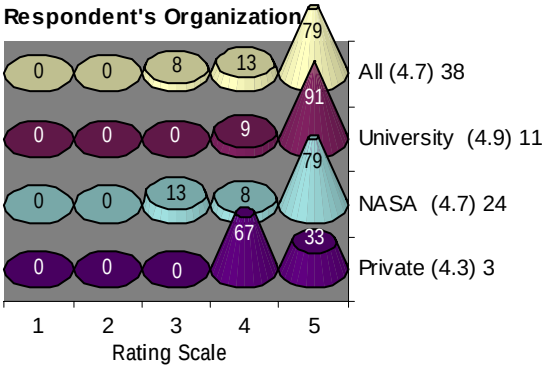


Demographic Trends (Summary): No significant differences in level of satisfaction between demographic groups.









Questions 4.1 Comments
- still don't know if interview process is best because of big time sink, so don't know how else you could get best data
- no pressure
- the survey is useful, but for me, if i can do on my own time and online, would be quicker
- self explanatory
- Interviews are good idea, don't want to fill out a web page, want to know someone is listening, and to talk with someone who has the ability to raise a red flag
- Customer service at its best.
- wonderful way to do these things
- Think good survey, covers all aspects of this and provides good way for the PI to give feedback.
- a good thing that i can talk to somebody, makes for clarification on questions, right on target, its a good idea to have live interaction, you force the issues, works well
- Interview process is very well conducted, and explanations are good. Positive.

Question 4.2 – *Please rate your level of satisfaction with the design and content of the ISS Utilization Survey questionnaire.*

MANAGER'S TOOL BOX

KEY FINDINGS: Respondents indicate a consistent high level of satisfaction with the interview process both for Increments 5 and 6, with no significant change between the two increments.

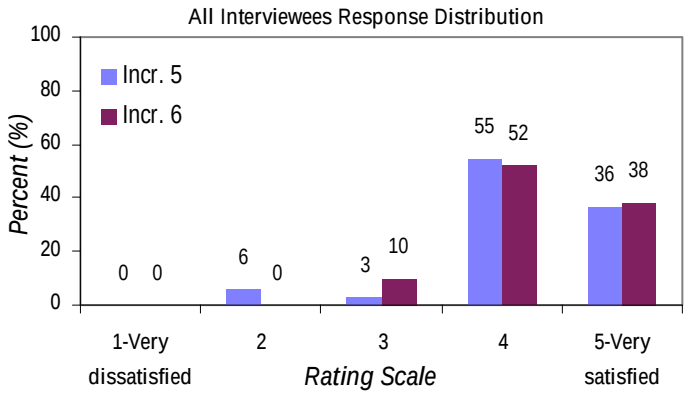
OVERALL STATUS	
IMPROVEMENT	*SATISFACTION*
Super	
Neutral	Green
Sub	

CURRENT LEVEL-OF-SATISFACTION STATUS AND RANKING
Satisfaction Level: Satisfied
Satisfaction Ranking: Not ranked

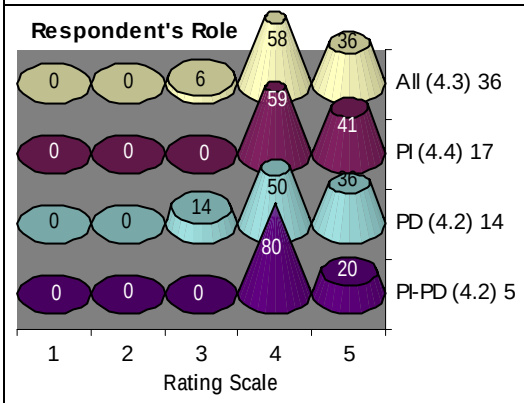
INCREMENT COMPARISON: *No Significant Change*
Comparison Index: Not calculated
Comparison index ranking: Not ranked

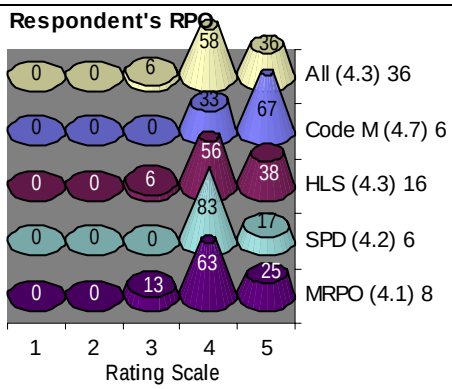
Response Descriptive Statistics

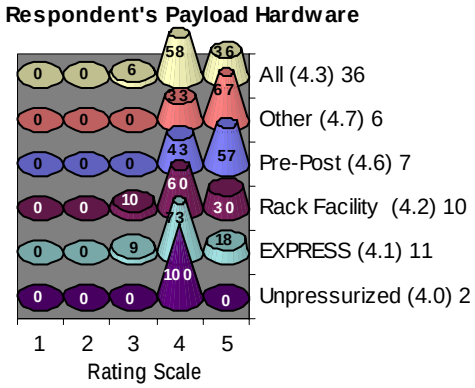
	Incr. 5	Incr. 6
No. respondents:	34	22
Applicable responses:	33 (97.1%)	21 (95.5%)
Mean score:	4.2	4.3
Scaled mean score:	80.3	82.1
Mean score Δ:	--	0.07
Standard error:	0.14	0.14
T-test:	--	28.0
Chi-square test:	--	76.2
Median score:	4	4
Skewness:	-1.24	-0.33
10th percentile score:	4	4
% not affected:	6%	0%
% affected:	91%	90%

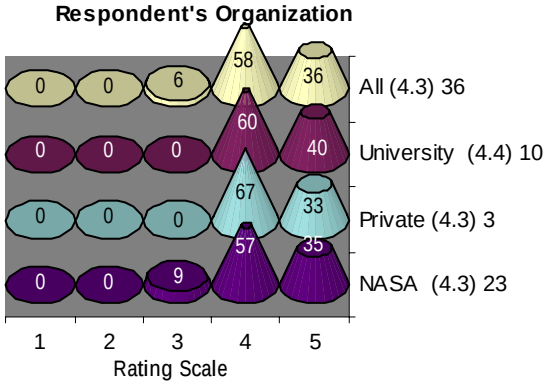


Demographic Trends (Summary): No significant differences in level of satisfaction between demographic groups.









Question 4.2 Comments

- Helen: should include way to dump into Word doc and let interviewees see this; not sure if too much or not enough; report looked condensed more than interview

- should increase your ranges any; if you ask people to review them, maybe define what you mean by payload development team or payload developer; not all will remember who makes up the teams; identify who is on PDL teams, Code U, OZ2, etc.; more identification

- stuff we talked about, way we do things, for HLS since we're kind of weird, makes it hard to rate/comment

- a little bit long but nature of collecting data requires this length to get good data

- does job nicely

- asking very pertinent, directed questions, that is it and nothing more.

- try to touch the other players in the Increment planning process or give some indication that me as PD should get their inputs, so I can be more informed for the Survey; interview other folks for increments and information that you may not get from PIs/PDs.

- first section was very good, got into detail, and stuff in section two a little more general and formulating specifics about processes under integration flow, might get more specific answers and indicate more specific problems. Some overlap, and so sometimes not clear about this discipline or what.

- lengthy but needs to be done.

- some more detailed areas I personally would go into, e.g., probe more deeply into the actual documents themselves, as to whether each document has worth; some documents, having been on mgmt side, provide zero value, but someone decided they have worth

- good wording.

- different survey for pre and post flight

- think it is essential to do this over the phone, and probably would have answered the questions wrongly, do not know all the NASA acronyms etc. Leading through this survey is very good.

-I like the way that some question are structured, if it was not applicable, sped things and tailored for individual interviewed.

- fair; Lengthy enough, but does not bog down.

- doesn’t take into account Columbia accident, more in detail, impact

11. ISS Payloads Office Customer Satisfaction Issues

In keeping with the stated goals of the ISS Utilization Survey, the ISS Payloads Office originally initiated a set of corrective actions in response to the Increment 5 Survey results and a summary of these actions was included in the *Increment 5 Final Report*. As part of the Increment 6 Survey process, the Increment 5 corrective actions underwent a thorough status evaluation and an updated status for these actions is included in Table 5 below. The Increment 5 corrective actions closed to date are listed at the top of Table 5 with the remaining open actions from Increment 5 listed below them.

With the concurrence of ISS Payloads Office management, the Payloads Office Customer Satisfaction Team elected to roll some of the remaining Increment 5 open actions into new issues identified from the Increment 6 Survey results. As part of this reorganization, the ISS Payloads Office modified its decision making regarding Survey corrective actions to become a two-step process in which problems identified by the Survey feedback were first classified as issues, to which corrective actions would then be assigned based on the discretion of Payloads Office line management. In accordance with this approach, problems identified based on review of the Increment 6 Survey results are added to the bottom of Table 5 where they are identified as issues only. Assignment of corrective actions to these issues will be made outside of the reporting of this document as part of the overall process improvement efforts of ISS Payloads Office management.

Table 5. ISS Utilization Survey Customer Satisfaction Corrective Actions and Issues.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
1.Inc5	**Facility Payload Roles & Responsibilities** Source: Incr. 5 verbal feedback from a single respondent.	Roles and responsibilities for ISS science facilities' sub-rack integration and operations teams should be reviewed to insure a clear, simple interface to the customer is maintained. Redundancy with other Program support organizations should be reconciled.	J. Scheib OZ2/RIOs	3/4/04: Closed on the basis of re-vamping of PIM function to serve as single point of contact, and development of a payload integration road show for new customers.
11.Inc5	**Customer Starter Kit for Customers**	In addition to "Road Show," develop and routinely distribute information packets to prospective ISS customers as a starter kit in addition to web-based resources.	J. Scheib	3/4/04: Closed and rolled into new issue #24.Inc6, entitled Customer Start Up Information and Education.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
14.Inc5	**Russian Payload Integration**	The lesson learned is that payload integration with Russia is difficult. ISSP needs to clarify and streamline this process to improve customer satisfaction. Recommend sharing Increment 5 Customer Satisfaction Survey Report with the Russian Space Agency.	J. Scheib OZ1/OZ2	3/4/04: Closed and rolled into new issue #21.Inc6 - Russian/NASA Coordination on Payload Activities
5.Inc5	**Data Requirement Need Date Rationale** Source: Incr. 5 verbal comments from multiple respondents and response data to ratings-based questions.	The customer comments received generally express frustration with the amount of documentation and data required and with the length of the schedule template. Improve customer education in this area. Provide customers with more comprehensive rationale for data requirements and their need dates.	J. Scheib OZ2	3/4/04: Closed. Rationale: Updated and clarified ISS Payload Integration Template baselined in October 2003. In addition, the Data Set Black Book has been reviewed and scrubbed to reduce inputs.
7.Inc5	**Customer Access to On-orbit Crew** Source: Incr. 5 survey verbal feedback from more than one respondent.	Review crew on-orbit communications policies. Determine impacts of allowing greater direct communication between customer and crew (via voice and email), allow greater, more spontaneous access to crew to improve customer satisfaction.	R. Cissom OZ1/POI	3/4/04: Closed. Rationale: POIF now holds regular telecons with PIs, also the Station chief scientist has made interventions to improve this area.
8.Inc5	**Change Request Approval Criteria** Source: Incr. 5 verbal feedback from a single respondent.	Review all change request processes and ensure approval criteria is specified, documented, and communicated to the customer in advance.	J. Scheib OZ2	3/4/04: Closed. Rationale: OZ has worked with Boeing to improve configuration management of Change Requests. Also, the question devoted to this topic scored in the Super Green (satisfied and improving) category in the Increment 6 survey. This suggests that there is

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
				no longer a widespread issue with this area.
12.Inc5	**Investigator Working Group (IWG)** Source: Incr. 5 survey verbal comments from a single respondent	Customer found this useful, was able to gain insight by sharing ideas with fellow customers. ISS Program (ISSP) should expand and improve this activity. Flow customer lessons learned collected by this Survey back into IWG agendas.	J. Uri RIOs	3/31/04: Open, in process.
13.Inc5	**Off-nominal Operations Support Planning** Source: Incr. 5 survey verbal comments from a single respondent with related input from a single call to the Payloads Office Customer Helpline.	SUBSA suffered an on-orbit anomaly. Their small operations team was distracted by the large amount of scrutiny and attention they received during this occurrence. They underestimated the amount of manpower it would take to manage on-orbit operations, particularly in planning. ISSP should review guidance given to potential customers with regard to operations support requirements and include guidance for off-nominal operations.	J. Scheib R. Cissom OZ2/POI	3/31/04. Open, in process.
15.Inc5	**Interface Definition Document (IDD)** Source: Incr. 5 survey verbal comments from multiple respondents	The customers value the IDD considering it their bible for engineering integration. A customer notes that some sections are misleading. ISSP should review the IDD (with customers) and revise sections as required.	M. Horkachuck OZ3	3/31/04: Open, in process.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
9.Inc5	**Information Security Customer Roadblocks** Source: Incr. 5 verbal comments from multiple respondents and response data to ratings-based questions.	Review information security architecture from a customer perspective to determine where the "brick walls" lie between the customer and Program information sources. Take corrective action as necessary to provide hassle-free access to information.	G. Esquivel	3/31/04: Open, in process.
6.Inc5	**Crew Training Scheduling Instability** Source: Incr. 5 survey verbal comments from more than one respondent	Customer satisfaction can be improved with improved access to the crew. Review policies regarding crew training scheduling, determine whether crew payload training with customers can be made a "hard point" in the crew training schedule to minimize customer inconvenience.	R. Cissom OZ1/POI	3/31/04: Open, in process.
4.Inc5	**On-orbit Experiment Execution Error** Source: Incr. 5 verbal feedback from a single respondent	Comment: *"…we have reservations about the results we got, even though we did get data, required big efforts to get data, the actual execution of experiment on orbit was incorrect, and this resulted in compromise of experiment data and quality of data."* Fully investigate this incident and draw lessons learned with corrective actions as required.	R.Cissom, POIF	3/31/04: Open, in process.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
3.Inc5	**Testing Facilities Compatibility** Source: Incr. 5 verbal feedback from a single respondent	Comment: *"…tested EMI at JSC, passed, but Marshall says we didn't pass, did not pass at MSFC, JSC apparatus was not appropriate for ISS, how can this be? Expected to have complicated things worked out before I had to use them."* Conduct an investigation of this incident. Determine whether testing equipment was or was not compatible. Insure all testing requirements and facilities are reviewed to prevent future incidents. Bring forward corrective actions as required.	M. Horkachuck OZ3	3/31/04: Open, in process.
2.Inc5	**MPLM Temperature Constraints** Source: Incr. 5 verbal feedback from a single respondent	Comment: *"…MPLM did not maintain temperature requirement, 20-40 degree requirement was not met, MPLM heaters were not turned on, went below 20 degrees, all my drugs came out of solution, this happened on Increment 5, got data showing heaters were not turned on."* Conduct an investigation of this incident. Clarify what MPLM temperature constraints are, what actually happened on this flight (UF-2) and bring forward corrective	M. Horkachuck OZ3	3/31/04: Open, in process.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
		actions as necessary.		
16.Inc5/6	**Payload Data Library** Source: Incr. 5 and 6 Survey verbal comments from multiple respondents and response data to ratings-based questions.	Direct use and Program use of PDL are the two Survey areas scoring the lowest level of customer satisfaction in both the Inc. 5 and 6 Surveys, with no significant change in satisfaction between the two Increments.	G. Esquivel	3/31/04. Open. Product/process improvement in work on many fronts. Increments downstream will see results.
10.Inc5	**Documentation Roadmap for Customers** Source: Incr. 5 verbal comments from multiple respondents	It is not clear whether the Payload Developers' Web Portal provides a clear map of Program documentation and a simple path to access it. The web portal may not be as widely advertised as it could be. The PALS follow-on system, EDMS, is not currently included in customer training.	J. Scheib OZ2	3/31/04: Open. In process: Need fact finding on how the web portal helps Customers with understanding Program documentation. There is no formal, explicit, processes being managed by OZ to train PIs and PDs on EDMS. However, training is available through the EDMS management team for on-site individuals, and off-site individuals through web-based training.
18.Inc6	**Outside User Satisfaction Level** Source: Demographic analysis of Incr. 6 Survey responses to ratings-based questions.	Demographic analysis of Incr. 6 Survey feedback shows a distinct trend of low-satisfaction /dissatisfaction among PI-PDs associated with SPD. Trend indicates that cases where entire development team of an investigation is outside of NASA are those that lead	TBD	3/31/04: Corrective action not yet assigned.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
		to an inordinate amount of dissatisfaction with processes.		
19.Inc6	**HLS PIM Satisfaction** Source: Incr. 6 survey responses to rating-based questions covering this topic.	Survey respondents associated with the HLS RPO are notably less satisfied with their PIM services compared to all other groups. All HLS PIM ratings scores are in the range of neutral to dissatisfied, whereas scores from all other RPOs are satisfied to very satisfied.	TBD	3/31/04: Corrective action not yet assigned.
20.Inc6	**PIM/SPOC Satisfaction Factor** Source: Incr. 6 Survey satisfaction factor	Improvement in PIM services and need for a single point of contact is most often sited area of service that would contribute to overall customer satisfaction.	TBD	3/31/04: Corrective action not yet assigned.
21.Inc6	**Russian/NASA Coordination on Payload Activities** Source: Incr. 5 and 6 survey verbal feedback from multiple respondents.	Multiple issues associated with conducting Payload integration and operations with Rosaviakosmos are related enough to be rolled into a single issue. The multiple issues include: understanding and communicating the steps in the Russian payload integration process to ISS Users, coordinating Payload activities involving Russian crew, and US cargo processing on Russian vehicles and shipping and returning US hardware to and from Russia.	TBD	3/31/04: Corrective action not yet assigned.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
22.Inc6	**Process Streamlining** Source: Incr. 6 survey verbal feedback from multiple respondents concerning Program Weaknesses.	Several piece of verbal feedback concerning Program Weaknesses are still citing Program bureaucracy and need for streamlining as a problem. The respondents don't see evidence of improvement. The verbal comments are somewhat at odds with feedback from rating-based questions which do cite improvement in these areas.	TBD	3/31/04: Corrective action not yet assigned.
23.Inc6	**Time-to-flight** Source: Incr. 6 verbal feedback from multiple respondents	Incr. 6 verbal comments cite length of time to fly a payload as a dissatisfaction driver. The Program is familiar with this issue and has put it into work.	TBD	3/31/04: Corrective action not yet assigned.
24.Inc6	**Customer Start Up Information and Education** Source: Incr. 6 Survey responses to ratings-based questions covering this topic as well as verbal comments.	Incr. 6 satisfaction with this area was third lowest of areas surveyed and has Neutral Yellow status. Score distribution notably has 43% sub-population of dissatisfied respondents covering many demographic groups. Comments significantly negative. Summary: Incr. 6 feedback shows no significant improvement in this area relative to Incr. 5, and current satisfaction is low. It would appear that corrective action activities applied to this issue to date (Road Show) have not yet shown up in customer	TBD	3/31/04: Corrective action not yet assigned.

Number	Title and Source of Issue	Issue Description	Actionee *(Responsible Party)*	Status
		ratings.		
25.Inc6	**Station Support Equipment Availability** Source: Incr. 6 Survey verbal feedback from a single respondents. (Also see Increment 6 Payload Manager Lessons Learned)	HRF had specific requirements for Station Support Equipment documented in the PIA and PTP for Increment 6 that ended up not being available for HRF use on orbit.	TBD	3/31/04: Corrective action not yet assigned.

Appendix A – ISS Utilization Survey Increment 6 Questionnaire

A review copy of the on-line version of the ISS Utilization Survey for Increment 6 as issued all interviewees is available at: www.inquisiteasp.com/cgi-bin/qwebcorporate.dll?APVTGZ. A condensed listing of the questions in the main Parts 1 to 4 of the Survey that follow the Customer Information page is provided below.

Part 1. Cross-Program Feedback

Section 1.1 – Overall Satisfaction

1.1.1 Please rate your overall satisfaction with the ISS Utilization Program (1-10, Very Dissatisfied/Very Satisfied/ N/A).

1.1.2 Please rate the degree to which the ISS Utilization Program met your expectations (1-10, Fell Short/Exceeded/ N/A).

1.1.3 How close to your ideal organization for ISS Utilization management would you rate the ISS Utilization Program? (1-10, Not close at all/Very close/ N/A)

1.1.4 Please rate how well the ISS Program gave priority to research during the current Increment (1-5, Not very well at all/Very well/ N/A).

1.1.5 Please rate the extent to which the amount of raw data collected by your ISS Investigation during this Increment was worth your participation in the ISS Program (1-5, Not worth it all/Very worth it/ N/A).

1.1.6 Assuming it did not change your own odds in competing for ISS research opportunities, how likely are you to recommend to a colleague that they perform research using ISS? (1-5, Very unlikely/Very likely/ N/A)

1.1.7 Assuming it did not change your own future opportunities for ISS support work, how likely are you to recommend to a colleague that they become a payload developer for ISS? (1-5, Very unlikely/Very likely/ N/A)

1.1.8 Assuming you could get research funding, how likely would you be to choose to pursue another research investigation on ISS? (1-5, Very unlikely/Very likely/ N/A)

1.1.9 Assuming it was not your only option for work, how likely would you be to choose to develop another payload for ISS, given the opportunity? (1-5, Very unlikely/Very likely/ N/A)

1.1.10 How would you compare your experience with the ISS Utilization program for the current increment to your experience on previous Increments? (1-5, 1-Much worse/3-About the same/5-Much better/ N/A).

Section 1.2 – Satisfaction with Program Processes

1.2.1 Please rate your level of satisfaction with the overall ease of doing business with the ISS Utilization Program (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.2 What is your opinion of the number of personal contacts you interacted with in order to accomplish your ISS project? (1-5, 1-Not enough/3-Just right/5-Too many/ N/A)

1.2.3 Please rate your level of satisfaction with your direct use of the Payload Data Library (PDL) (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.4 Please rate your level of satisfaction with how effectively the data in the Payload Data Library (PDL) are used by the ISS Utilization Program (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.5 Please rate your level of satisfaction with the ISS end-to-end payload integration process (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.6 Please rate your level of satisfaction with the amount of data and documentation you had to produce and deliver to meet the ISS Utilization Program's requirements (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.7 Please rate your level of satisfaction with the required schedule for delivering the data and documentation you had to produce to meet ISS Utilization Program requirements (1-5, Very dissatisfied/Very satisfied/ N/A).

1.2.8 What is your opinion of the number of ISS Program formal review meetings that you were required to prepare for or participate in? (1-5, 1-Not enough/3-Just right/5-Too many/ N/A)

1.2.9 Please rate your level of satisfaction with the ISS Utilization Program's formal review processes in general (1-5, Very dissatisfied/Very satisfied/ N/A).

Section 1.3 – Satisfaction with your Customer Support Interface

1.3.1 Please rate your level of satisfaction with the support your ISS Investigation received from your assigned NASA Research Program Office (1-5, Very dissatisfied/Very satisfied/ N/A).

1.3.2 Please rate your level of satisfaction with the services provided by the Payload Integration Manager (PIM) assigned to your Investigation (1-5, Very dissatisfied/Very satisfied/ N/A).

1.3.3 Please rate your level of satisfaction with the services provided by the EXPRESS Payload Integration Manager (EPIM) assigned to your Investigation (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.4 Please rate your level of satisfaction with the support the ISS Utilization Program provided to your investigation in the area of Crew Training (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.5 If at any time during your Investigation's development, integration and operation your requirements of the ISS changed, please rate your level of satisfaction with how the ISS Utilization Program responded to your change request (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.6 Please rate the level of your satisfaction with the communication flow between you and the personnel in the ISS Program (1-5, Very dissatisfied/Very satisfied/N/A).
1.3.7 Please rate your level of satisfaction with the ease of locating necessary information (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.8 Please rate your level of satisfaction with the ease of accessing necessary information once it is located (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.9 Please rate your level of satisfaction with your Investigation's interface to the crew on-orbit (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.10 Please rate your level of satisfaction with any educational/orientational information you received from the ISS Utilization Program at the outset of your ISS Project (1-5, Very dissatisfied/Very satisfied/ N/A).
1.3.11 Please rate the level of your satisfaction with the usefulness of the ISS Utilization Program's electronic reference material, including websites and CD-ROMs (1-5, Very dissatisfied/Very satisfied/ N/A).

Section 1.4 – Satisfaction Factors

1.4.1 What three aspects of the ISS Utilization Program would have the highest impact on your overall satisfaction if they were improved?

Satisfaction Factor 1 – (Open-ended, verbal response w/comments)
Satisfaction Factor 2 – (Open-ended, verbal response w/comments)
Satisfaction Factor 3 – (Open-ended, verbal response w/comments)

Part 2. Feedback on Specific Management / Functional Areas

2.1 Please rate your level of satisfaction with the various services and support provided by your **NASA Payload Development Team**
2.2 Please rate your level of satisfaction with the various services and support provided by your **NASA Research Program Office.**
2.3 Please rate your level of satisfaction with the various services and support provided by **Research Planning and Integration.**
2.4 Please rate your level of satisfaction with the various services and support provided by **Mission Integration.**
2.5 Please rate your level of satisfaction with the various services and support provided by **Payload Engineering Integration.**
2.6 Please rate your level of satisfaction with the various services and support provided by the **Operations Integration** management area.
2.7 Please rate your level of satisfaction with the various services and support provided by **Real-Time Payload Operations.**
2.8 Please rate your level of satisfaction with the various services and support provided by the **Payload Safety** management area.
2.9 Please rate your level of satisfaction with the various services and support provided by **Payload Physical Integration**.

Services (1-5, Very Dissatisfied/Very Satisfied/N/A)
Processes (1-5, Very Dissatisfied/Very Satisfied/N/A)
People (1-5, Very Dissatisfied/Very Satisfied/N/A)
Hardware Tools (1-5, Very Dissatisfied/Very Satisfied/N/A)
Software Tools (1-5, Very Dissatisfied/Very Satisfied/N/A)
Documents (1-5, Very Dissatisfied/Very Satisfied/N/A)
Deliverables (1-5, Very Dissatisfied/Very Satisfied/N/A)

Columbia Mishap

CM - Please rate the extent to which your Investigation was directly affected by the Columbia mishap (1-5, Not directly affected/Highly affected/N/A).

Part 3. Open-Ended Feedback

Section 3.1 – Lessons Learned

3.1 Based on your ISS experience, what lessons, either positive or negative, have you learned that could help future users of the ISS? (Open-ended, verbal response)

Section 3.2 – Program Strengths and Weaknesses and General Comments

3.2.1 What are the major strengths of the ISS Program? (Open-ended, verbal response)

3.2.2 What are the major weaknesses of the ISS Program? (Open-ended, verbal response)

3.2.3 Is there anything else you would like to tell us? (Open-ended, verbal response)

Part 4. Satisfaction with the ISSUS Interview and Survey Questionnaire

4.1 Please rate your level of satisfaction with how the ISSUS interview was conducted (1-5, Very Dissatisfied/Very Satisfied/N/A).

4.2 Please rate your level of satisfaction with the design and content of the ISSUS questionnaire (1-5, Very Dissatisfied/Very Satisfied/N/A).

Appendix B – Statistical Methods

For the questions in the ISS Utilization Survey that solicited responses based on numerical rating scales, the overall data analysis strategy had two main goals: (1) selection of a single statistical parameter that would form the principal basis for describing the data and making comparisons of the Increments 5 and 6 response results for each question, and (2) development of methods for testing the statistical significance of variations in this parameter as well as the response data as a whole. For each question, the response data take the basic form of a distributed frequency of rating scores, and with data of this type there is typically no single "best" statistical parameter that can roll up all features of the distribution. A particular challenge for many of the Survey questions was the tendency of their score distributions to be based on relatively small *n* (sample size) with asymmetric (skewed) shapes that are not easily parameterized by a single measure of center. These features present challenges in applying standard statistical tests to assess the significance of Increment-to-Increment variations in the data, because many of these tests assume that the data are normally distributed.

Upon review and analysis, it was elected to use question mean scores as the principal comparison statistic for the response data. Compared to other descriptive statistics such as the median, the mean is a more sensitive indicator that takes all values in the distribution into account, and it is a commonly recognized basis for a variety of statistical methods. The tendency of the mean to be inordinately affected by extreme or outlier values in asymmetric data distribution is, however, a factor that had to be managed given the sometimes skewed (typically negatively skewed) nature of the Survey question response distributions. This issue, and the other statistical challenges presented by the Survey response data were addressed by following a flexible approach that cross-compared the results of more than one statistical test to look for variations in the data. The two principal statistical tests used in this approach are described as follows:

- *T-test*: For the Survey questions with satisfaction-based rating scales (see Section 4 above), the statistical significance of the difference in mean score between Increment 5 and Increment 6 was assessed using the statistic:

$$T = \frac{\bar{x}_{Incr.6} - \bar{x}_{Incr.5}}{\sqrt{\left\{\left[(n-1)S^2_{Incr.6} + (m-1)S^2_{Incr.5}\right]/(n+m-2)\right\}(1/n + 1/m)}}$$

  where $\bar{x}$ denotes the sample mean, corresponding in this case to the question mean rating score for a given increment, S is the sample variance (score variance), n is the Increment 6 sample size, and m is the Increment 5 sample size. If the total set of response scores obtained for each question during each of the Increment surveys are considered to be random samples of a corresponding larger population, each with population mean μ, then the Increment 5 and Increment 6 Surveys can be considered to have sampled populations with identical measures of center if $\mu_{Incr.6} = \mu_{Incr.5.}$ If this is *true* the values of T will follow a Student *t* distribution with $r = n + m - 2$ degrees of freedom. For the value of T calculated for a given question the corresponding significance level $\alpha/2$ obtained from the two-tailed Student *t* distribution can then be taken as the probability that the hypothesis $\mu_{Incr.6} = \mu_{Incr.5}$ is true, i.e. the Increment 5 and 6 respondent populations would yield the same mean score if they were all surveyed. In the present case, the alternative parameter 1- $\alpha/2$ was used as a measure of the probability that the alternative hypothesis $\mu_{Incr.6} \neq \mu_{Incr.5}$ is true and the Increment 5 and Increment 6

respondent populations are different with respect to their mean scores. The parameter 1- $\alpha/2$ is the value reported under the heading "T test" in the descriptive statistics section of the datasheets for the Survey Part 1 questions in Section 6.0 above. In practice it was elected to use 1- $\alpha/2 \geq 0.80$ (80% significance level) as a key criteria for determining whether a question should be classified as showing a statistically significant change in mean score between Increment 5 and 6. This criteria was supplemented with information from the multinomial goodness-of-fit test described below for those questions where 1- $\alpha/2$ was close to the 80% critical value.

- *Multinomial goodness-of-fit test (chi-square test).* Although the T-test statistic has some flexibility with regard to the distribution shape of the data being tested, it is generally based on the assumption that the two data sets being compared are each normally distributed and have similar variances. If these assumptions are violated, but not too badly, the T-test is satisfactory but the significance levels are only approximate. Because as noted above a number of the Survey score distributions deviate from normally, it was considered prudent to support decisions on statistical significance with an additional statistical test that required fewer assumptions regarding the form of the data. The additional test applied in this case was a multinomial goodness-of-fit test, which tests the statistical difference of the overall shapes of the score distributions, with no assumptions required concerning whether they are normal or not. The goodness-of-fit test is based on the statistic:

$$\chi^2 = \sum_{i=1}^{5,10} \frac{\left(O_i^{Incr.6} - E_i^{Incr.6}\right)^2}{E_i^{Incr.6}}$$

where for a particular Survey question $O_i^{Incr.6}$ represents the observed frequency count of a particular rating score *i* (1 to10 or 1 to 5) obtained in the Increment 6 survey, and $E_i^{Incr.6}$ represents the "expected" frequency count for that score value for Increment 6 that is predicted from the Increment 5 response data according to:

$$E_i^{Incr.6} = \left(O_i^{Incr.5} / m_{ap}\right) n_{ap}$$

where $O_i^{Incr.5}$ is the frequency count for the rating score *i* obtained on Increment 5, m_{ap} is the total number of applicable responses to the question obtained on Increment 5, and n_{ap} is the total number of applicable responses to the question obtained on Increment 6. The term in parenthesis, which represents the relative frequency of the score value *i* obtained in the Increment 5 survey, can be regarded as the probability estimate that the score value will be selected by any of the Increment 6 respondents *if the Increment 5 and 6 interview groups were identical.* The extent to which the actual frequency of this score value differs from the predicted is a measure of the statistical difference of the Increment 5 and Increment 6 interview groups in terms of their predisposition to select a score value of *i*. The sum of the differences as measured by χ^2, which is a measure of the overall deviation of the actual Increment 6 score distribution from the statistically expected one based on Increment 5, has a chi-square statistical distribution. From the value of χ^2 calculated for a given question the corresponding significance level α obtained from the chi-square distribution can then be taken

as the probability that the Increment 5 and 6 interview groups were the same with respect to their predisposition to select score values. As was done for the T-test, the alternative parameter 1- α was used as a measure of the probability that the alternative hypothesis is true and the Increment 5 and Increment 6 interview groups were on the whole different in their decision-making regarding score selection. The parameter 1- α is the value reported under the heading "chi-square test" in the descriptive statistics section of the datasheets for the Survey Part 1 questions in Section 6.0 above. In practice the critical value of χ^2 corresponding to a value 1-α ≥ 0.80 (80% significance level) was taken as the criteria for deciding that the Increment 6 score distribution for a question was statistically different than that for Increment 5.

Although the T-test was the primary statistic used to assess the degree of statistical difference in question responses, both the T-test and chi-square statistics were used in combination when the T-test results were borderline and/or suspected of being inaccurate. In these cases questions with T-test values near the borderline 80% significance level were classified as showing statistically significant change (either Improving or Getting Worse) if they had chi-square values significantly above the 80% significance level. Conversely, questions with borderline T-tests would generally be put in the No Significant Change category if they had chi-square values significantly below the 80% significance level. Question for which both statistics were around 80% significance level were generally classified as showing No Significant Change unless a review of their overall score distribution and other descriptive statistics supported a different classification.

Cover Image Captions

International Space Station Expedition Six crewmembers, — Donald R. Pettit, NASA ISS science officer (front), Nikolai M. Budarin, flight engineer (left), Kenneth D. Bowersox, mission commander (right) — in the Russian Soyuz spacecraft before leaving the Station, where they completed science experiments, and heading back to Earth on May 3, 2003.

A close up view of a water droplet on a leaf on the Russian BIO-5 Rasteniya-2/Lada-2 (Plants-2) plant growth experiment, which is located in the Zvezda Service Module on the International Space Station (March, 2003).

How do you make a super spaceship? The first step is to find the right building materials. That's the goal of the Materials International Space Station Experiment. MISSE, a square suit-cased-size container filled with hundreds of materials samples, has been attached to the outside of the ISS since late 2001. The samples are being exposed to the harsh environment of space to see how they'll hold up. Scientists can use this information to design future spacecraft with the best materials. The samples will be retrieved during a future space walk and then will be returned to Earth. Materials scientists at NASA's Marshall Space Flight Center in Huntsville, Ala., will analyze many of the samples.

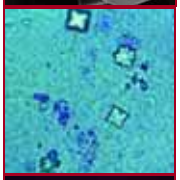
Expedition Six Commander Ken Bowersox spins Zeolite Crystal Growth sample tubes in order to minimize bubbles inside that could affect crystal formation in this photo taken Dec. 17, 2003, prior to the start of the first 15-day zeolite experiment. Hard as a rock, yet able to absorb liquids and gases like a sponge, zeolites form the backbone of the chemical processes industry on Earth. By using the ISS's microgravity environment to grow larger, better quality crystals, NASA and its commercial partners hope to improve petroleum manufacturing and other processes.

Crater Lake National Park celebrated it centennial in 2002, and is one of the nation's oldest national parks. A volcanic caldera in South Central Oregon's Cascade Mountains, Crater Lake boasts breathtaking scenery, created about 7,700 years ago with the volcanic eruption and subsequent collapse of the summit of Mt. Mazama. Today, the crater, about 8 km wide, contains the deepest lake in the United States — nearly 600 m (2000 ft) deep. The main source of the water in the lake is the annual snowfall of over 1300 cm (500 inches). When this image was taken from the International Space Station on January 6, 2003, nearly 180 cm (70 inches) of snow covered the ground. This photo was taken on January 6, 2003 by Expedition Six crew members aboard ISS as part of the ongoing Crew Earth Observation (CEO) experiment.

View of a bubble formed as a result of a Zeolite Crystal Growth (ZCG) experiment in the Destiny laboratory on the ISS. Expedition Six Commander Ken Bowersox used a Station drill to mix 12 Zeolite samples in clear tubes. Scientists on the ground watching on TV noticed bubbles in the samples. Bowersox used a modified mixing procedure to process autoclaves to isolate bubbles. He re-inserted the samples in the ZCG furnace in Express Rack 2 in the U.S. laboratory/Destiny. This experiment has shown that the bubbles could cause larger number of smaller deformed crystals to grow. Bowersox rotated the samples so that the heavier fluid was thrown to the outside while the lighter bubbles stayed on the inside.

Expedition Six International Space Station Science Officer Don Pettit works on the Microgravity Science Glovebox (MSG) in the Destiny laboratory on the Station. Pettit worked with ground teams at NASA's Marshall Space Flight Center in Huntsville, Ala. to get the glovebox ready for experiments.

Zeolite crystals, top, grown in a ground control experiment. Zeolite crystals, bottom, grown in microgravity on the USML-2 mission. Zeolites are substances found throughout nature that have a rigid crystalline structure similar to honeycomb. When heated to expand, a zeolite reacts much like a sponge being squeezed to give up its contents. The name "zeolite" comes from the Greek words zeo (to boil) and lithos (stone), literally meaning "the rock that boils." The Zeolite Crystal Growth experiment continued during Expedition Six.



The micrograph shows calcium oxalate crystals in urine. These small crystals can develop to form renal stones. The Renal Stone Risk During Space Flight experiment continued during Expedition Six.

Astronauts onboard the ISS have seen a lot of auroras in recent months. They've even flown through some. Usually the lights are green; sometimes they're red. Other colors are rare. So when ISS Expedition Six Science Officer Don Pettit looked out the window on March 29th and saw these striking blue-shaded auroras over Scandinavia, he had to grab his camera and take a picture. Auroras get their colors from different atoms and molecules in Earth's atmosphere. Greens and reds come from atomic oxygen. Blues from molecular nitrogen. Usually, though, nitrogen adds only a hint of blue — often unnoticeable.