



October 2003

National Aeronautics and

Fiscal Year 2003 NASA-Wide Facilities Condition
Assessment and Deferred Maintenance Estimate

Lessons Learned Report

NASW - 02010 Task Order 05

Space Administration Facilities Engineering Division



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EXECUTIVE SUMMARY

Purpose:

This document provides observations, lessons learned and suggestions for future improvement to the overall planning and execution of the Deferred Maintenance (DM) Assessment Project¹. It provides the individual site summaries for each of the sites visited, which include individual site observations, points of contact (POC), logistics information, directions to sites, and raw real property inventory (RPI) data.

Significant Observations:

- a. There were no major logistical or communication problems with visits to any site. The escorts were extremely helpful and knowledgeable (generally they were the same people as last year).
- b. The teams continue to find many issues with the Real Property database, which are addressed in a separate report. Significant observations include: facilities are being found that are not on the RPI; facilities listed on the RPI do not exist; facilities have incorrect facility classification codes; facilities are identified as having questionable current replacement values (CRV)s; property records have suspect Unit of Measure or incorrect capacities recorded; land improvements projects are still listed as real property items; and facilities under \$5,000 initial book value are being included in the RPI (but are not required to be carried on the RPI although they are required to be assessed). Additional findings include: multiple facilities of different classes are being grouped together under one facility number and one CRV; there is a wide variety of methods for listing utilities; and trailers and other portable buildings continue to be difficult to track.
- c. Some of the facility ratings may seem unusual. At the Canberra Deep Space Communication Center, there was significant damage to the exterior of the Columntation Tower and Columntation Tower Building, Building #4, due to a January 2003 forest fire. Although their exteriors were given a low rating, their functionality was restored with other building systems remaining relatively unharmed.
- d. Tropical Storm Bill hit the Michoud area on June 30, 2003. As a result of the storm, a large scaffolding set was knocked over onto a set of power lines near Facilities 451 and 452. The power system in the area was not safe at the time of the DM assessment. Therefore, facilities 451 and 452 were not reviewed this year. Based on discussions with the Lockheed Martin personnel, these facilities were not upgraded, improved or modified over the past year.

¹ NASW-02010 Task Order 005

- e. Access was denied for only a very few facilities. One building at White Sands, which is now leased to the United States Air Force (USAF), is classified. A few buildings associated with Building #35 at Glenn Research Center (GRC) were not accessible. All of these facilities were assessed using anecdotal information from the escorts and the facilities managers.
- f. At Poker Flats Research Range, Fairbanks, Alaska, the construction of many of the buildings varies from those of lower latitude buildings in order to take advantage of temperature and weather typical of the Alaska climate. However the Universal Launch Protection Shelter is contrary to this thought process. It was built to east coast standards and shipped to Alaska. As a result, it is barely functional during cold weather. Unfortunately, the testing that this building was built for is only performed during the colder winter months rendering this facility useless.
- g. There are two facilities at the Brigham City, Utah site, with a CRV of \$500,000. It takes about an hour to assess them but it takes a travel day to get there and a travel day to return, for a three day total.
- h. At a few Centers, the local fire department or other entities have placed numbers on some facilities that are not listed on the RPI for reasons specific to those entities. At other Centers the RPI number and the local facility number may not be the same. This causes a duplication of facilities in the DM database. Assessors must be aware of local numbering systems, as compared to the numbering system in the RPI.

Lessons Learned:

- a. Currently, this assessment begins with the copying of the NASA RPI from its web page and the pasting of that information into the DM database. We have determined that this method of data mining is wrought with inconsistencies, and the best way to download the data is directly from the NASA RPI database.
- b. Generally, the assessment times in the proposal are accurate. The number of people assigned to perform the assessment was also adequately calculated in the proposal.
- c. It is less expensive to drive to GRC than it is to fly.
- d. White Sands requires two assessment teams instead of one.
- e. The visit to the Brigham City, Utah facility is not cost effective. The site should be assessed remotely.
- f. Assessors must be aware of local numbering systems, as compared to the numbering system in the RPI. At a few Centers, the local fire department or other entities have placed numbers on the facilities that are not reflected in the RPI. At other Centers the RPI number and the local facility number may not be the same. This causes a duplication of facilities in the DM database.

- g. The Canberra, Australia visit was dove-tailed with the Hawaii Space Flight Tracking and Data Network (HSTDN), assessment which allowed for optimization of travel costs.
- h. It requires 60 days to prepare personnel and develop the database for the assessment.
- i. 45 to 60 days are realistically required to create, compile, and quality check this set of reports and ensure that they are consistent with other deliverables such as the DM Assessment report and its accompanying RPI Anomalies report.
- j. There was some minor confusion at some sites with the rating of plumbing type equipment within larger liquid storage facilities. Some assessors thought this system should be rated under program support equipment. It should be assessed as plumbing. This did not significantly affect the assessment ratings to most facilities because it was clarified during the assessment period; however it must be made clear that equipment with pipes and valves including gas (liquid and gas) lines, water lines, and sewage lines are assessed as plumbing items.
- k. In facilities or systems with a large CRV, or where it is large percentage of a facility's CRV, (i.e. VAB, ARC wind tunnel, SSC static test stands, etc) a single rating change can change the DM estimate of FCI for an the entire facility.

Suggestions for Future Improvements:

- a. The DM database must be a download of the database, not a copy and paste exercise off the website.
 - b. NASA should provide the contractor with access to the RPI database sixty days prior to the start of the next assessment.
 - c. National Aeronautics and Space Administration (NASA) should consider classifying communication systems (both information networks and telephone networks) as a separate facility class because of the importance of these systems and their cost.
 - d. A site coordinator must be assigned to each site assessment. In addition to the responsibility of performing facility assessments, the site coordinator must coordinate logistics with the site for the visit, interview site personnel for the assessment of all utilities and support facilities such as roads, pavement, etc., discuss RPI issues with the real property officer, ensure consistent recording and quality assurance of the assessment data, and provide required reporting for each site.
 - e. The Brigham City, Utah site should be assessed using remote methods.
 - f. The next assessment needs to start in March if it is due in October. Realistically, it takes 60 days to build the data base and train the assessors, 90 days to perform the assessment and 45 to 60 days to complete all the reports as required by the SOW.
 - g. The RPI and facility classification continue to be a hindrance. NASA should:
-

- a) Develop a DOD type guide to facilities classification. A very detailed guide with clear examples; including how to properly classify a compound or a group of building associated with one function, but are not similar in facility class.
 - b) Provide a workshop to the Real Property Officers and Clerks on the new guide and classifications.
 - c) Provide clear instruction on the type of information that should be in the comments section of the property cards. Some of these comments are very well done, but most add more confusion.
 - d) Currently, facilities under \$5000 are not required to be tracked in the RPI by NASA Policy Guidance 8800.15A, *Real Estate Management Program Implementation Manual*. However, no two Centers carry this instruction out in the same manner. Some do not track these facilities at all; some track all on the RPI as if they were a more expensive facility; and some, like Kennedy Space Center, track them but ID them under the RPI's status category. NASA should clarify the guidance on this issue to create some consistency. We believe the Kennedy approach is the most useful to those concerned with real property accountability.
- h. Those buildings with a CRV in excess of \$100 million dollars should be assessed by at least two different teams during the same assessment to assure consistency in the ratings for those facilities.

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Acronyms

ARC	Ames Research Center
ATK	Alliant Technologies
BM	Building Manager
BMAR	Backlog of Maintenance and Repair
CANG	California Air National Guard
CC	Construction Coordinators
CDSCC	Canberra Deep Space Communications Complex
COSS	Center Operations Support Services
CRV	Current Replacement Value
CSOC	Combined Systems Operation Contract
DFRC	Dryden Flight Research Center
DM	Deferred Maintenance
DSN	Deep Space Network
ESE	Earth Science Enterprise
FCI	Facility Condition Index
GEWA	Government Employee Welfare Association
GOCO	Government-Owned, Contractor-Operated
GRC	Glenn Research Center
GSFC	Goddard Space Flight Center
HQ	Headquarters
HSTDN	Hawaii Space Flight Tracking and Data Network
HTF	Hypersonic Test Facility
HVAC	Heating, Ventilating and Air Conditioning
JBOSC	Joint Base Operations Support Contract
JCI	Johnson Controls, Incorporated
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center
KPGO	Kokee Park Geophysical Observatory
KSC	Kennedy Space Center
LaRC	Langley Research Center
MAF	Michoud Assembly Facility
MDSCC	Madrid Deep Space Communications Complex
MFA	Moffett Federal Air Field
MOD	Mission Operation Division
MSFC	Marshall Space Flight Center
MSS	Mississippi Space Services
NASA	National Aeronautics and Space Administration
NSBF	National Scientific Balloon Facility
NEMS	NASA Equipment Management System
NOAA	National Oceanic and Atmospheric Administration
O&M	Operations and Maintenance
PFR	Poker Flats Research Range
POC	Points of Contact

R&D	Research and Development
RPI	Real Property Inventory
RPO	Real Property Office
SCI	System Condition Index
SFOC	Space Flight Operations Contract
SGS	Space Gateway Support
SPF	Space Power Facility
SSC	Stennis Space Center
SSFL	Santa Susana Field Laboratory
TTA	Thermal Testing Area
UOM	Unit of Measure
USAF	United States Air Force
VSFC	Virginia Space Flight Center
WFF	Wallops Flight Facility
WSTF	White Sands Test Facility

AMES RESEARCH CENTER

Including: Camp Parks

Including: Crows Landing

Mountain View, California
6/16/03–6/19/03

Plexus Scientific Team Members:

Desi Dundics (Lead)

Wayne Powell

Kent Kester

Keith Burnikell

Mike Stakem (Photographer)



Figure 1. Ames Research Center Wind Tunnel

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NASA

Moffett Field, CA 94035

M/A 19-11 94035-1000

Summary of Site Visit

1. Visit Summary:

The Ames Research Center (ARC) DM visit took place on Monday, June 16 through Thursday, June 19, 2003. There were 180 items reviewed from the ARC RPI. Of these, fifteen (15) trailers from the RPI were not found and not assessed. Also, two facilities were land, landscaping, or land improvements (facility # LAND and NA285). In addition, one facility not on the RPI was added to represent the ArcJet Storage Facility (facility # N238A).

There are two remote facilities associated with ARC, which are Camp Parks and Crows Landing. Camp Parks is primarily a large warehouse used to store items that do not require immediate retrieval. Considering the parking area, fence, and

systems to support operation of the warehouse, there are a total of nine items to assess at Camp Parks. The other remote site is Crows Landing, which is a remote airfield, basically abandoned, comprised of a total of 37 items.

The ARC DM assessment was completed as scheduled.

Coordination for access to the ARC site was led by Sal Navarro (NASA representative for ARC), who also performed duties as one of the technical escorts. Gerald O’Connell (NASA) and Robert Munoz (NASA) were also technical escorts, and Ron Thompson (NASA) and Todd Dolci (NASA) were the escorts for the cover photographs. Desi Dundics, Wayne Powell, Kent Kester, and Keith Burnikell were the Assessment Team members from Plexus, and Mike Stakem from Plexus was the photographer. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Knowlen Knowles, who is the ARC Real Property Inventory Officer.

The visit began with an introduction on the morning of June 16. The field assessments were completed Thursday morning, June 19. An exit-brief was provided to Steve Frankel, Jeffrey Draper (Chief of Facilities and Logistics), and Rick Serrano (Acting Deputy Director Code J Center Operations) on the afternoon of June 19.

Overall, the ARC site proper and Camp Parks are in good condition. ARC contains a significant number of unique laboratory and test buildings (such as wind tunnels, centrifuges, simulators, etc.) and training and administrative buildings to support these operations. The interiors of the active buildings are all well maintained.

The Crows Landing area primarily contains abandoned buildings; the RPI lists most of these buildings with an “abandoned” status. Although the landing strip and taxiways are in good condition, the surrounding buildings and support services are not being used. Due to previous contamination, there is an ongoing environmental cleanup operation which may eventually allow the Government to turn the facility over to a local organization.

2. Other Comments of Interest: None.

Logistics Information

1. General Information (*On the Site*):

The site is very close to the Mountain View and Sunnyvale areas around San Jose, California. It is about a 30-minute drive from the San Jose Airport and approximately a one-hour drive from the San Francisco Airport. The Camp Parks and Crows Landing sites are approximately one to one and a half hours drive (one way) from ARC.

2. Directions to the Site:

From the San Jose Airport: Exit the airport onto Highway 101 north. Take the second Moffett Field exit (Moffett Road), approximately 16 miles from the airport, which brings you directly to the visitor's gate where the security badges are issued.

From the San Francisco Airport: Exit the airport onto High 101 south. Take the second Moffett Road exit, approximately 34 miles from the airport, which brings you directly to the visitor's gate where the security badges are issued.

3. Concept of Operations:

When assessing the ARC facilities, it should be coordinated so that the assessment is performed at the same time as the MFA facilities, since they are located adjacent to each other and the same team of NASA personnel is responsible to maintain both sites. The Camp Parks and Crows Landing sites will require approximately six to eight hours to assess because of travel time.

4. Actual Man-Hours Required to assess the Site:

ARC	-	100 hours
Camp Parks	-	1 hour (not including travel)
Crows Landing	-	2 ½ hours (not including travel)

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MOFFETT FEDERAL AIR FIELD

Mountain View, California

6/16/03–6/19/03

Plexus Scientific Team Members:

Desi Dundics (Lead)

Les Dundics

Troy Broussard

Mike Stakem (Photographer)

Center POC:

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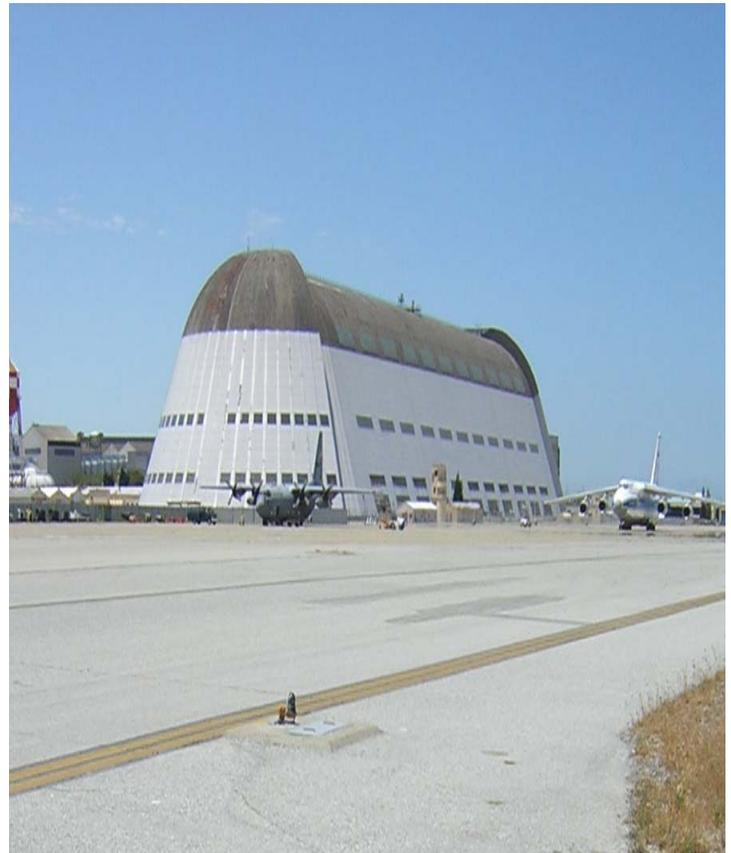


Figure 2. Moffet Field Hangar 1

Summary of Site Visit

1. Visit Summary:

The Moffett Federal Air Field (MFA) DM visit took place on Monday June 16, through Thursday June 19, 2003. There were 296 items reviewed from the ARC MFA RPI. Of these, one facility was found and assessed; it was recently constructed as a California Air National Guard (CANG) Aircraft Hangar and expected to be listed on the RPI as “out grant” facility #662. The MFA DM assessment was completed as scheduled.

Coordination for access to the MFA site was led by Sal Navarro (NASA representative for Ames Research Center and Moffett Field). Carlos Brown (NASA) was the technical escort and Ron Thompson (NASA) and Todd Dolci (NASA) were escorts for the cover photographs. Desi Dundics, Les Dundics, and Troy Broussard were the Assessment Team members from Plexus and Mike

Stakem from Plexus was the photographer. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Knowlen Knowles who is the MFA Real Property Inventory Officer.

The visit began with an introduction on the morning of June 16. The field assessments were completed Thursday morning, June 19. An exit-brief was provided to Steve Frankel, Jeffrey Draper (Chief of Facilities and Logistics), and Rick Serrano (Acting Deputy Director Code J Center Operations) on the afternoon of June 19.

Overall, this site is in good condition. There are a large variety of buildings; including older structures typical of a government facility that offers services for transient staff at an airbase facility (i.e. bachelor and enlisted quarters, an exchange, recreation, etc.) It also contains buildings to support air operations, such as hangars, maintenance facilities, taxiways, runways, training operations, and administrative support. These types of buildings are mixed in age and condition. There are some buildings that support outside organizations, such as a brand new hangar for the CANG and a Carnegie Mellon University Research Center. The interiors of the active buildings are well maintained. There are many abandoned buildings and there are initiatives to outsource much of the site or find alternative uses for the facilities.

2. Other Comments of Interest: None.

Logistics Information

1. General Information (*On the Site*):

The site is very close to the Mountain View and Sunnyvale areas around San Jose, California. It is about a 30-minute drive from the San Jose Airport and approximately a one-hour drive from the San Francisco airport.

2. Directions to the Site:

From the San Jose Airport: Exit the airport onto Highway 101 north. Take the second Moffett Field exit (Moffett Road), which is approximately 16 miles from the airport. This leads directly to the visitor's gate where the security badges are issued.

From the San Francisco Airport: Exit the airport onto High 101 south. Take the second Moffett Road exit, approximately 34 miles from the airport, which leads directly to the visitor's gate where the security badges are issued.

3. Concept of Operations:

Assessments should be coordinated so that the Moffett Field facilities are assessed at the same time as the ARC facilities, since they are located adjacent to each

other. Also, the same team of NASA personnel is responsible for maintaining both sites.

4. Actual Man-Hours Required to assess the Site: 70 hours

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DRYDEN FLIGHT RESEARCH CENTER

Edwards, California
7/8/03 - 7/10/03

Plexus Scientific Team Members:
Desi Dundics (Lead)
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Center POC:
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Figure 3. Dryden Flight Research Center

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Summary of Site Visit

1. Visit Summary:

The Dryden Flight Research Center (DFRC) DM visit took place on Tuesday, July 8 through Thursday, July 10, 2003. There were 248 items reviewed from the RPI. The following is a summary of the actions associated with these items:

- 13 items from the RPI could not be found.
- Four items should be removed because the buildings have been merged and incorporated into another item. Facility 4807 is listed twice. Facility 0042-46 is also listed separately as facilities 0043, 0044, and 0045.
- Four facilities were found that were not on the RPI. (Guard Shack #4834, Long Range Optical Building #192, Substation #12 and #24).
- Two items were land or land improvements and were not assessed (facility # NB14 and facility # NB118).

The DFRC DM assessment was completed as scheduled.

Coordination for access to the DFRC site was led by Gary Lewis (maintenance sub contractor representative for DFRC), who also performed duties as the technical escort. Desi Dundics and Les Dundics were the Assessment Team members from Plexus, and Paul Benthin was the photographer. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Jennifer Terrelonge, who is the local Real Property Inventory Officer.

The visit began with an introduction on the morning of July 8. The field assessments commenced immediately following the briefing and continued for a total of three days. An exit-brief was provided to Greg Spenser on the afternoon of July 10 following the field assessments.

Overall, the DFRC site is in good to very good condition. DFRC contains buildings to support research and development associated with flight, as well as considerable hangar space. DFRC is also an alternate landing site for the space shuttle and has buildings to support storing and transporting the shuttle. The interiors of the buildings are all well maintained.

2. Other Comments of Interest:

Hangar #1623 belongs to an “Alliance” of organizations that include Edwards Air Force Base and the U.S. Marine Corps. NASA is, however, the primary user of the hangar and has been performing many improvements to this building. It is possible, but considered unlikely at this time, that the Alliance can take back the building for their use and discontinue use by NASA.

Logistics Information

1. General Information (*On the Site*):

The site is very close to the cities of Palmdale and Lancaster, California, which are approximately a one and a half hour drive north from Los Angeles.

2. Directions to the Site:

From the Los Angeles Airport: Exit the airport onto Highway 101 north. Then take 170 North toward Sacramento. Merge onto I-5 North. Merge onto CA-14 north toward Palmdale. The total distance is approximately 62 miles.

3. Concept of Operations:

When assessing the DFRC facilities, it should be coordinated so that the assessment is performed at the same time as that of the Palmdale facilities. These two facilities are located within 40 minutes of each other.

4. Actual Man-Hours Required to assess the Site: 60 hours

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GLENN RESEARCH CENTER

Cleveland, Ohio 44135

7/21/03–7/23/03

Plexus Scientific Team Members:

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Desi Dundics (Equipment Links)

Les Dundics (Equipment Links)

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Figure 4. HAZMAT Storage Shed.

Summary of Site Visit

1. Visit Summary:

The Glenn Research Center (GRC) DM visit took place from Monday, July 21 through Wednesday, July 23, 2003. A total of 194 items were assessed. Of these, six were no longer present and could not be assessed; six were reported on the RPI database with initial book values of less than \$5,000 but assessed anyway; and 20 new facilities were found and assessed. Items with initial book values of less than \$5,000 will be sent to GRC personnel for deletion from the RPI. The GRC DM assessment was completed as scheduled.

Coordination and access to GRC was provided by Mr. Joe Torri; he ensured security badging, escorts, and meetings. The GRC escorts were about 16 building managers (BM) who had responsibility for mutually exclusive groups of buildings throughout the Center. Plexus team members were Albert Ruiz (Plexus Lead), Brian Chopp, Desi Dundics, and Les Dundics, Carrie Seringer, and Matt Young

(as the photographer). Two teams of two persons each accompanied by a particular BM escort accomplished the assessment. The photographer was either accompanied by a third escort or worked alone when no escort was required. One team would make arrangements with one BM and assessed those buildings within his/her responsibility while a second team worked with a second BM and his/her buildings. In the case of the photographer, he worked from west to east at the Center. In-depth review of RPI miscellaneous issues was accomplished through discussions arranged directly with the BM responsible.

The visit began with an introduction on the morning of July 21 with Mr. Rick Danks, Mr. Joe Torri, and many members of the facilities maintenance community. The field assessments were conducted from Monday, July 21 through Wednesday, July 23. A short out-brief was provided to Mr. Joe Torri on the morning of July 23.

Overall, this site is in good condition.

Most of the buildings were well maintained. Critical facilities appeared to be running in good condition. Additionally, many of the larger buildings have had renovations within the last 10 to 15 years, so their interiors, building systems, and program support equipment were generally in good shape.

3. Other Comments of Interest:

Site infrastructure facilities are generally covered under the 3900 series real property numbers. Having this group of facility numbers proved to be very helpful in tracking and adequately assessing them. All 29 of them were identifiable to the BM that was responsible for it, so it was easy to adequately discuss the facility or utility well enough to provide a good assessment rating.

As was done for last year's assessment, Building #35 and Building #18 were separated into multiple facilities. Building #35 was assessed as 17 distinct facilities. Building #18 was assessed as two separate facilities. This was done because both Buildings #18 and #35 have buildings with different functions – one may serve as an administration building and another as a test cell and then another as a laboratory.

This year it was noticed that a significant number of large facilities contained CRVs that were too low and should be evaluated for a more accurate accounting of that CRV. The discrepancy was most prevalent in those facilities that were classified as research and development (R&D) facilities.

Logistics Information

1. General Information (*On the Site*):

GRC can be reached by automobile in about six hours from the Plexus Scientific Alexandria office. It is located on the opposite side of the runway from the Cleveland Airport. The main complex contains the largest number of buildings. To the north of the Center are Buildings #500 and #501 which are outside the complex. To the southwest and across the Abram Creek is the west campus where the baseball diamonds and picnic areas are located.

2. Directions to the Site:

From IH 495 take I-270 North and then I-70 West to Hagerstown; then take I-76 to New Stanton/Pittsburgh (for 184 miles); then take I-80 for 57 miles before reaching I-71 North towards Cleveland; travel to Middleburg Heights until you are on Engle Road; at Engle Road turn right onto Rosbough Road onto the main entrance to GRC.

3. Concept of Operations:

The order in which the facilities were assessed was based on the preference of each BM escort and those buildings he or she had responsibility for. Because there were 16 BMs, it was a challenge on the last day to effectively coordinate assessment time with the BM responsible for the last group of facilities. Help from Mr. Joe Torri is recommended. The use of a site map with building numbers was helpful for the assessment.

4. Actual Man-Hours Required to assess the Site:

222 hours (for travel, assessment and for the photo taking).

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PLUM BROOK STATION

Sandusky, Ohio
7/28/03-7/29/03

Plexus Scientific Team Members:
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Les Dundics
Mike Stakem (Photographer)

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Figure 5. Plum Brook Station Space Power Facility

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Summary of Site Visit

1. Visit Summary:

The Plum Brook Station DM visit took place on Monday, July 28 and Tuesday, July 29, 2003. There were 282 items reviewed from the Plum Brook Station RPI. In addition to these 282 items,

- Two items not on the RPI were found and should be added.
- 10 items on the RPI have been removed from site.
- 23 items are in the “Reactor” area, which is in the process of being decommissioned. These items are contained within a fence and could not be accessed. Their condition was as reported by the decommissioning manager.
- One item was not rated because it represents ground improvements.
- There are a considerable number of items that have been abandoned and should be removed from the RPI. The site is in the process of identifying

those items, and getting funding for demolition and removal. However, this will be a long process before completion occurs. The first such area identified for demolition and removal is the old sewage treatment area out on Botay Road. This consists of 12 items numbered: 8395, 8352, 8396, 8397, 8331, 8337, 8353, 8394, 8393, 8332, 8392, and 8392.

- There are some items where the function of the building has changed (i.e. now used for storage), and the CRV appears very high for its current usage. These items should be investigated.

The Plum Brook DM assessment was completed as scheduled.

Coordination for access to the Plum Brook site was led by Robert Puzak. Technical escort duties were performed by PBOSG individuals: Skip Bender, Joe Cebul, and Dave Chandler. Desi Dundics and Les Dundics were the Assessment Team members from Plexus, and Mike Stakem was the photographer. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Robert Puzak with support from Jimmy Simek.

The visit began with an introduction on the morning of July 28. The field assessments were commenced the same day, and were completed on the following day. An exit-brief was provided to Robert Puzak and Skip Bender on July 29.

The primary function of the Plum Brook site is to perform research and development testing of aerospace and aerodynamic items. The site is made up of small pockets of isolated test areas, four of which are active and the rest are inactive. The nuclear reactor area is in a two to three year process of decommissioning. The four main areas of concentrated buildings for testing are the following:

- Space Power Facility (SPF) Test Site
- Hypersonic Test Facility (HTF)
- B-2 Test Site
- K Site

2. Other Comments of Interest: None

Logistics Information

1. General Information (*On the Site*):

The site is near the city of Sandusky, Ohio, which is approximately 65 miles west of Cleveland. The terrain is flat with considerable vegetation. Access to the buildings was generally good, except for in the old recreation area and in some of the inactive test areas, where the vegetation was overgrown.

2. Directions to the Site:

From the Cleveland Airport, exit the airport following the signs to Highway 480. Take Highway 480 until it runs into the Ohio Turnpike. Get onto the turnpike going west until the city of Elyria, exit at Route 57. Go north one mile until it hits Highway 2. Take Highway 2 going west until Sandusky. Take the 250 Road exit off of Highway 2. Go south on 250 for two lights, take a right onto Bogart Road. After approximately 300 yards, take a left onto Botay Road and follow that road until the main gate of Plum Brook Station.

3. Concept of Operations:

It will take approximately two days to perform the assessment. The site contains 100 “igloos”, which are ammunition bunkers that were built back in the early 1940’s. All of the bunkers are identical, and it should be acceptable to assess only one of the bunkers as a representative “example.” There is lodging at the Cedar Point recreation area. There may be a problem in the summertime, since rooms may not be available at all times because of Cedar Point traffic, and the nearby rooms may be more expensive than allowed by government standards. Rooms at the nearby town of Bellevue were available and reasonably priced.

4. Actual Man-hours Required to assess the Site: 40 hours

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GODDARD SPACE FLIGHT CENTER

Greenbelt, Maryland 20770
8/04/03–8/06/03

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Patrick J. Murray
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Site RPI Assistant:

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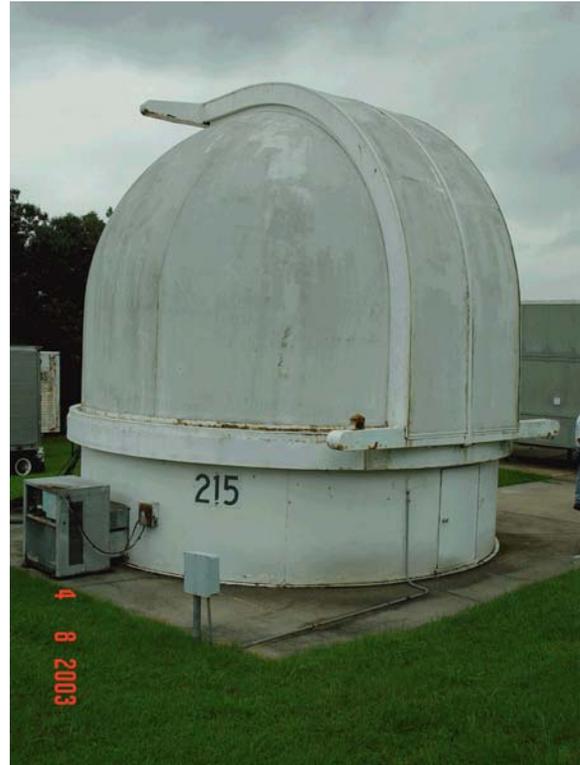


Figure 6. Building 215 Dome

Summary of Site Visit

1. Visit Summary:

The Goddard Space Flight Center (GSFC) DM visit took place from Monday, August 4 through Wednesday, August 6, 2003. A total of 168 items were assessed. Of these, 10 were no longer present and could not be assessed; four have an initial book value of less than \$5,000 but were assessed anyway; and 19 new facilities were found and assessed. Items found to have an initial book value of less than \$5,000 will be sent to GSFC personnel for deletion from the RPI. New facilities found that were not on the RPI will also be sent to GSFC personnel for addition to the RPI.

The GSFC DM assessment was completed as scheduled.

Coordination and access to GSFC was provided by Mr. Steve Sansbury, the LB&B Associates Planner who ensured security badging, escorts, and meetings. Mr. Bob Rautenberg, the primary NASA GSFC POC, was kept informed of the assessment's progress. The GSFC escorts were Construction Coordinators (CC) from LB&B: Mr. Dwayne Henderson, Mr. Geno Drury, and Mr. John Gauthier. Plexus team members were Albert Ruiz (Plexus Lead), Brian Chopp, Dan Geldermann, Don Sapp, Patrick J. Murray, and Mike Stakem as the photographer. Two teams of two or three Plexus employees each accompanied by LB&B escorts accomplished the assessment. The photographer was accompanied by a third escort. One focused on those buildings under the responsibility of one CC while a second team focused on those buildings under the responsibility of a second CC. Mr. Dwayne Henderson escorted team one in Areas 100, 200, 300, and 400. The photographer worked from west to east at the Center. In-depth review of RPI miscellaneous issues was accomplished through discussions arranged by Steve Sansbury; they involved various members of the maintenance organization.

The visit began with an introduction on the morning of August 4 with Mr. Bob Rautenberg and many members of the facilities maintenance community including LB&B personnel. The field assessments were conducted from Monday, August 4, through Wednesday, August 6. A short out-brief was provided to Mr. Bob Rautenberg, the GSFC Facilities Branch Head, on the afternoon of August 6.

Overall, this site is in good condition.

Most of the buildings were made of brick and required little maintenance. Additionally, most of the major buildings have had renovations within the last 10 years so the interiors and building systems were generally in good shape. The buildings on the East Campus were in better shape since the buildings in that area were constructed more recently.

2. Other Comments of Interest:

There were quite a large number of antennas, trailers, and storage sheds not listed on the GSFC RPI. In fact, unlike at most Centers, there were no antennas listed on the GSFC RPI. Antennas should be listed on the RPI as separate facilities and subsets to the control buildings (permanent structures) that support them. For example, the 3 meter antenna near Building #221 should be described as Facility 221A. If this antenna is not part of the NASA inventory it should be identified at GSFC to reflect that.

Some trailers were listed on the RPI but not easily identified in the field. Many other trailers were not listed on the RPI, possibly because they are owned by another organization or had been decommissioned. GSFC is aware that trailers are an issue and has plans to either remove the trailers from the RPI or to prevent trailers from being added to the list. In the mean time, GSFC should identify their trailers using standard building markers and remove all other markers and signs

from the trailers, especially those that have more than one building marker on them.

Storage sheds were also not easy to identify. Again, some were listed on the RPI and many others were not. It is possible, again that they have a value below \$5,000, are owned by another organization, or have been either abandoned or decommissioned. But without some kind of noticeable identification, it was difficult to determine whether they should be listed on the RPI or not.

Many of the facility descriptions on the RPI were not sufficient to properly identify them and assess them. Some had descriptions that were different than their current function. Others did not have enough information to adequately determine either their scope or their location. If possible, facilities and structures should contain some description of current function and location. One option is to include in the description which major building that facility or structure supports or is near. Another option is to change a facility number to one that represents the location of the nearest main building instead of a 900 series number. Below are some examples:

<u>Facility No</u>	<u>Description</u>	<u>Recommendation</u>
005B	Storage Building for Building #5	Air Compressor Shed
027B	Chemical Waste Storage Building	Explosive Waste Storage
922	Electrical Distrib. Switchyard at EOSDIS	East Substation
969	LANDSAT Direct Readout Facility	028A
970	Microwave Terminal Facility	028B

Site infrastructure facilities are generally covered under the 973 through 999 real property numbers. For infrastructure facilities, NASA should use the NASA class code description as the facility description. This will help to better identify them in the field. Also, it was noticed that there were some facilities/utilities generally found at other Centers that weren't found in the GSFC RPI. These should be accounted for in the RPI since they usually contain a large CRV. They include:

- Telephone system
- Communication systems (between control buildings and antennas)
- Welfare facilities and structures that aren't Government Employee Welfare Association (GEWA)
- Monuments (such as rockets)

Some of the facilities should be combined. In these cases there has been a change to the function of the facility. They are listed below:

- 954 Concrete Pad/Propagation Site. It was once the pad and underground control house used for air balloons, but is now being used as the concrete foundation for Building #79. Facility 954 should be removed from the RPI and its value combined with Building #79.

- 955 Servo/Magnetometer Shelters. It is the underground and aboveground portion of the shelter which is Facility 310. Facility 955 should be removed from the RPI and its value combined with Building #310.
- 978 Stand-By Generator Plant. This structure is now the basement to Building #24C. It is currently only used for storage. Facility 978 should be removed from the RPI and its value combined with Building #24C.
- 922 Electrical Distrib. Switchyard at EOSDIS. This structure is also called the East Substation. Although its CRV is listed as \$5,249,334 this Facility 922 should be removed from the RPI and its value combined with Building #974 (Substations).

Some of the facilities should be separated from the master facility number they support. This will help to better account for improvements to the facilities and allow for a better assessment of each type of function performed for them. For example, Building #24, the Central Heat/Refrig. Plant Complex, should be separated into the following:

<u>Fac. No</u>	<u>Description</u>
24	Main Plant (boilers and chillers)
24A	West side cooling towers
24B	East side cooling towers
24C	Generator Building

Other facilities that should be considered include Buildings 5, 12, 25, and 83.

Logistics Information

1. General Information (*On the Site*):
GSFC can be reached by automobile in about 45 minutes from the Plexus Scientific Alexandria office. It is located off of the Baltimore/Washington Parkway where the NASA employee entrance can be used if one enters with a Temporary Badge. Access is also available by using IH 495 off of the Greenbelt, Maryland exit 22A. The main complex contains the East campus and the West campus with the East campus being the newer side. There are four outlying areas called Area 100 (Antenna Test Range), Area 200 (Optical Tracking Site), Area 300 (Magnetic Tracking Site) and Area 400 (Propulsion Test Site). These four areas are easily accessible with an access card within 10 minutes from the main complex.
2. Directions to the Site:
From IH 495 take the 22A exit to the Baltimore/Washington Parkway; quickly bear right onto MD 193 to Greenbelt/NASA Goddard; turn left onto MD 193 then turn right on Hanover Parkway; after 0.5 miles turn left onto the main entrance to GSFC.

3. Concept of Operations:

The facilities were assessed in no particular sequence and from no particular direction. The facilities were assessed based strictly on the CC escort's preference and those buildings he had responsibility for. For one team, the outlying Areas 100, 200, 300, and 400 were the first group to be assessed on Monday. Then the team assessed the facilities within the main complex that the escort was responsible for. The second team generally assessed from west to east based on those facilities that the CC escort was responsible for. Using a site map that shows building numbers was helpful for the assessment. Having some knowledge of the 900 series facilities was also helpful because some were not utilities but buildings and structures.

4. Actual Man-Hours Required to assess the Site:

127 hours (for travel, assessment and for the photo taking).

Lessons Learned or Problems Encountered

None noted.

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HAWAII SPACE FLIGHT TRACKING/DATA NETWORK STATION

6/02/03 – 6/03/03

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Bill Wildes (GSFC)

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Figure 7. 7-meter antenna

Summary of Site Visit

1. Visit Summary:

The Kokee Park Tracking Station DM visit took place on Monday, June 2, 2003. There were 60 items reviewed from the GSFC Hawaii Space Flight Tracking and Data Network (HSTDN) RPI. Of these items, six are no longer present or “do not exist”. Additionally, 16 items were not assessed due to double entry on the RPI and three new items were found. A total of 38 RPI items were assessed in the Kokee Park Geophysical Observatory (KPGO). Originally planned for 1.5 days, the KPGO DM assessment was completed in a little over half a day.

Mr. Clyde Cox led coordination and access for the assessment at HSTDN. Brian Chopp was the site coordinator for Plexus.

Overall, the HSTDN facilities were in fair condition. Most facilities were of cinder block construction with raised seamed roofs requiring little maintenance. Many of the facilities suffered exposure to the elements and required exterior and interior preservation.

2. Other comments of interest:

After the visit, items on the KPGO RPI that were listed as "general" or catch-all 111, 222, 333, 444 series facilities were evaluated. These general items proved to be a mix of land, active facilities, and utilities. The 111 and 222 categories, described as Roads/Paving and Ground Improvements, respectively, were easily assessed. A review of the RPI documents indicated that the 333 category, described as Communications, included such items as antenna foundations, antenna hardstands, all improved work areas around antennas, communications,

cable trays, cable termination vault, ducting, trenching/backfills for communications cabling, and also boresite equipment in Building #16. Some of the antenna sites that were assessed but not on the RPI may be included in this category. The 444 category, described as Utilities, included fire detection/protection, fuel storage, water, sewer, and electrical items such as generator switchgear. Building #11, Power House was included in this category. Building #11 should be considered for listing as a separate RPI facility item.

CRV Discrepancies: Facility 32 Hydro-Mechanical Building listed CRV at \$101,676. Based on inputs from Clyde Cox, it should be approximately \$250,000. This item was originally identified in the 2002 DM assessment and has not been updated.

Lessons Learned or Problems Encountered

NASA GSFC RPI- There is a discrepancy between what the NASA GSFC RPI reports is at the KPGO and what is actually at the KPGO. This may be due to the fact that other governmental services or agencies have RPI control of the facilities not listed on the NASA RPI. Because NASA is the controlling agency, there needs to be a way to ensure that all of the facilities not owned by NASA are tracked as “Tenant Property” (or some other descriptor) rather than Real Property.

Separate Building and Antenna Numbers- Most of the buildings that had antenna usually had two separate numbers: one for the building and one for the antenna/structure. This numbering convention is especially appropriate, since there have been instances where antenna have been removed and used in another area or new antenna put in their place.

U.S. Navy Building Numbers- Most of the structures did not have building numbers. But those that did have building numbers did not have numbers that corresponded to the NASA RPI numbers for each structure. Apparently, this new numbering system was put in place by the U.S. Navy.

Utilities or FAC # 444 Item- Concrete pads and fresh water storage tanks (some up to 7,500 gallons) were not included in NASA RPI because they were part of Utilities or FAC # 444 item in the RPI. Also, no electrical substations or supporting concrete pads were in the RPI because they are also part of Utilities or FAC #444 item in the RPI. This is different than what has been seen at other sites such as Wallops, where there is a separate RPI number for each of those tanks and substations. Nonetheless, an overall assessment was made for all utilities using the description mentioned above. Utilities contain the Power Building, Facility 11, which should be assessed and listed under its own RPI number.

Logistics Information

1. General Information:
The site was about a 30-minute drive from downtown Lihue, Kauai. There is one main facility located at the Kokee Observatory at an elevation of approximately 3500ft on the western side of the island. Other facilities for HSTDN are located within a half a mile from the main center.
2. Directions to the Site:
From Lihue take highway 50 approximately 15 miles west to the town of Waimea. Once through the town take a right on Waimea Canyon Drive and travel approx 14 miles to the NASA Kokee Park Geophysical Observatory. HSTDN will be on the left.
3. Concept of Operations:
HSTDN required one site visit and all facilities were located in a close proximity to each other. The HSTDN visit followed the Canberra, Australia assessment, which allowed for optimization of travel costs.
4. Actual Man-Hours Required to assess the Site: 6

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NATIONAL SCIENTIFIC BALLOON FACILITY

Palestine, Texas, USA

7/30/03

Plexus Scientific Team Members:

Wayne Powell

Center POC:

NASA Representative:

Danny Ball



Summary of Site Visit

1. Visit Summary:

The National Scientific Balloon Facility (NSBF) DM visit took place on Wednesday, July 30, 2003. There were 13 items reviewed from the GSFC WFF NSBF RPI. Of these, one item is no longer present. Two items were not located at this site, record number “020/1621 1018-NASA Prop/Cont Held-Sci Balloon Flgt. Fac, NM” is located in Ft. Sumner, New Mexico and “024/1621 1018-NASA Prop/Cont Held- Demountable Building (AUSTR)” is located in Alice Springs, Australia.

The NSBF DM assessment was completed as scheduled.

Coordination for access to the NSBF site was led by Danny Ball (NASA Site Manager); Dennis Ladd (Lead Maintenance Manger) was the escort. Wayne Powell was the Assessment Team member from Plexus.

The visit began with an introduction on the morning of July 30th. The field assessments were completed by that afternoon. A short out-brief was provided to Mr. Danny Ball that afternoon. Overall, this site is in excellent condition. All of the buildings are made of prefabricated metal. The interiors of the building are well maintained.

2. Other Comments of Interest: None

Logistics Information

1. General Information:

The site was about a 5-minute drive from downtown Palestine, Texas.

2. Directions to the Site:

Palestine, Texas is located between Houston and Dallas, Texas just off HWY 45 East of Buffalo, Texas. Hwy 79 East can be taken from Hwy 45 in Buffalo, Texas for a 45-minute drive to Palestine.

3. Actual Man-Hours Required to assess the Site:

Building tours only took two man-hours. Drive time from Houston, Texas was four hours each way.

POKER FLATS RESEARCH RANGE

30 Mile Steese Highway
Fairbanks, Alaska 99712
6/23/03

Site Address:

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Center POC:

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Fairbanks, Alaska 99775*



Figure 9. Red Stone Antenna

Summary of Site Visit

1. Visit Summary:

The Poker Flats (PFR) DM visit took place on Monday, June 23, 2003. There were 18 items reviewed from the PFR RPI. There were 43 additional facilities found and assessed which were not listed on the RPI. These facilities include a

large variety of items, from facilities as small as a site gate to those as large as 11 meter antenna and an office building.

The PFR DM assessment was completed as scheduled.

Coordination for access to the PFR site was led by Ray Martinez (NASA representative for Poker Flats), who also performed duties as a technical escort. Also acting as escort was the Site Manager Greg Walker. Les Dundics was the Assessment Team member from Plexus, who also took photographs. Resolution of RPI miscellaneous issues was accomplished through coordination between Les Dundics and Ray Martinez. The PFR Real Property Inventory Officer is an Alaska University representative, Ms. Jackie Dashiell.

The visit began with an introduction on the morning of June 23rd. The field assessments were completed the same day, and an exit-brief was provided to Ray Martinez on the afternoon of June 23rd.

Overall, the PFR site is in excellent condition. PFR contains a significant number of unique buildings for performing the study of the ionosphere, study of national weather, and changes in the aurora borealis. The buildings, antennas, and maintenance facilities support these operations. The interiors of the active buildings are all well maintained.

2. Other Comments of Interest:

Many of the buildings constructed in Alaska vary from those in warmer climates. Because there is typically perma-frost five feet below the surface, many buildings are designed with no underground plumbing; otherwise freezing conditions would render them non-functional. The Universal Launch Protection Shelter is an example of this; since it was built to east coast standards and shipped to Alaska, it is barely a functional building during cold weather. Unfortunately, the testing that this building was built for is only performed during the colder winter months.

Logistics Information

1. General Information (*On the Site*):

The site is 600 acres of remote woods, approximately 40 miles north of Fairbanks, Alaska. The nearest town is Fox, which is 18 miles away. There are no living or eating facilities in Fox, so the best place to spend the night is in Fairbanks.

2. Directions to the Site:

From the Fairbanks Airport, go east to the intersection of Route 3, Airport Way, and Route 2, Steese Highway. Go north on Route 2 for about 10 miles to Fox. Turn right at the way station and continue another 18 miles to the range. The entrance to the range is marked by a 30 foot red and white rocket near the

- highway. At this rocket, take a right onto Neil Brown Road, which leads to the main gate. The operation of the gate is operated remotely by the office attendant.
3. Concept of Operations: It will take approximately one day to fly to Alaska, one day to perform the assessment, and another day to return. Plan on at least a three day trip.
 4. Actual Man-Hours Required to assess the Site: 10 hours

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WALLOPS FLIGHT FACILITY

Wallops Island, Virginia 23337
6/09/03–6/11/03

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Dan Geldermann
Brian Chopp
Matt Gorham
Mike Stakem (Photographer)

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NASA Representative:

Site RPI Manager:
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Figure 10. Storm drainage system, Facility # S-0009, is aged and in significant need of repair.

Summary of Site Visit

1. Visit Summary:

The Wallops Flight Facility (WFF) DM visit took place from Monday, June, 9 through Wednesday, June 11, 2003. A total of 628 items were reviewed from the WFF RPI. Of these, 12 were no longer present; 20 have a CRV of less than \$5,000 as reported on the RPI database but were assessed anyway; and 12 facilities not listed on the RPI were found and assessed. The total number of RPI items assessed was 640. Those items with an initial book value of less than \$5,000 were sent to WFF personnel for deletion from the RPI. The WFF DM assessment was completed as scheduled.

Coordination for access to the WFF site was led by Mr. A. J. Kellum. NASA WFF escorts included Wayne Redmond, Mike Hill, and Dave Brittingham. Plexus team members were Albert Ruiz (Plexus Lead), Brian Chopp, Dan Geldermann, Matt Gorham, and Mike Stakem as the photographer. Two teams of two Plexus employees each accompanied by WFF escorts accomplished the assessment. The photographer was accompanied by the third escort. One team

focused on the main base while a second team focused on the island. The photographer worked west to east from the main base and then south to north on the island. Resolution of RPI miscellaneous issues was accomplished through coordination between all of the Plexus team members and NASA representatives (Jerry Wall, Gloria Sullivan and A. J. Kellum) on the afternoon of the last day.

The visit began with an introduction on the morning of June 9. The field assessments were conducted from Monday, June 9 through Wednesday, June 11. A short out-brief was provided to Mr. Bill Phillips, the WFF Facilities Branch Head, on the afternoon of June 11, followed by an RPI document review of about 153 miscellaneous “S” and “I” category facilities.

Overall, this site is in good condition. It was evident that a substantial number of buildings have gone through renovations since the last assessment. Almost all of the Center transformers have been replaced and are six years old at most. The interiors of the buildings are well maintained. Several facilities are operated and maintained by another entity, such as the U. S. Navy, Virginia Space Flight Center (VSFC and also known as Virginia Space Port) or National Oceanic and Atmospheric Administration (NOAA). This is especially true of the airfield operations.

3. Other Comments of Interest:

At the end of the assessment, it was discovered that the WFF storm drainage system is aged and in need of significant repairs. After reviewing the four applicable RPI records, it was also determined that the CRV for the WFF storm drainage system was too low; it is believed that the total CRV should be about \$25M. This was not noticed last year and the system ratings last year were a “3” compared to this year which are rated at a “2.” NASA WFF personnel are working to address this problem. The four facility items with questionable CRVs are:

<u>Facility Number</u>	<u>Description</u>	<u>CRV</u>
I-0057	GD DRAINAGE & STORM SEWER SYSTEM	\$1,108,341
S-0009	STORM SEWER & DRAINS – MB	\$3,730,804
S-0018	RUNWAY RUNOFF STORM DRAINAGE SYS	\$1,743,008
S-0071	AFLD STOR, DRAINAGE SYSTEM	\$ 118,169

On the island there is beach erosion that is being abated with a man made rock sea wall. That rock seawall has a real property number of I-0033.

Logistics Information

1. General information:

WFF can be reached by automobile in about four hours. From a Chincoteague, VA hotel it takes about 15 minutes to get to the main base gate. Hotel rates during the summer run about \$148 per night and the visit should not occur at the

same time as the Pony Penning (because of potential lodging problems). See the web site www.chincoteague.com/events.html for more information. WFF is physically separated, with a mainland section and an island section. From the main base it takes about 15 minutes to get to the island, and a different colored badge is required for island access.

2. Directions to the Site:

From the east take US 50 to US 13 south; follow US 13 to VA Route 175 east; follow Route 175 for five miles then take a left.

From the south travel north on US 13; follow US 13 to VA route 175 east; follow Route 175 for five miles then take a left.

3. Concept of Operations:

Because WFF is physically separated between the island and the mainland, there are two distinct routes that the assessment teams should take. The island team should move from one end of the island to the other (south to north is acceptable). The mainland team should assess the facilities by first traveling through the F section around Building #F-016, then backtracking across the runway from the farthest point back to the F section; then going to the N section and working back to the F section. In this way, various areas are completed by starting in the central area and working both farthest areas then coming back to the center.

Using maps (found in previous project documents) that show building numbers was critical to rapidly finding many of the facilities. Each team should take a copy of a map with them during their area assessments. Mr. Kellum also has historical documents which provide a good reference to finding older facility numbers.

Assessing the I and S series of facilities was accomplished by looking at the RPI documents available at Building #F-016 and discussing their scope, condition, and history with Ms. Gloria Sullivan and the facility personnel. Doing the assessment for those 153 facility items on the RPI was rapid and produced a better understanding of the need to consolidate these series.

4. Actual Man-Hours Required to assess the Site:

174 hours for assessment teams and 60 hours for the photographer (including eight hours round trip travel for each of five persons).

Lessons Learned or Problems Encountered

Plexus and NASA spent about four hours tracking 153 of the original 628 items on the WFF RPI that were listed as general utility I and S series of facilities. Since last year, 53 of the I and S series facilities have been eliminated by WFF personnel. Looking through the RPI documents for the I and S series facilities

proved to be critical in identifying where they are located and/or the scope of area they encompass before they could be properly assessed. The comments in the DM database now contain valuable “where is it” information for the I and S series facilities, as well as other miscellaneous information that clarifies their location or scope.

Mr. Claude Linton was very helpful as an escort for the island because he has keys that provide access to most of the island facilities, knows where buildings can be found, and is extremely familiar with the maintenance history of those facilities.

Some transformers (sometimes described as electrical sub stations) are numbered while others are not and were assessed as part of the building that they serviced. WFF is working to complete the replacement of most of the transformers, so these transformers usually keep the old facility number. The newer plan calls for no facility numbers on those items. Instead, a new numbering convention with different labels is being used to better identify every transformer or substation.

Some fuel oil tanks have building numbers while others do not. This problem is similar to the transformer problem mentioned above.

It was found that the combined CRV for the storm drainage system throughout the Center is too low. Further investigation of the storm drainage system revealed that the system is in need of significant repair. The assessed system ratings for these facilities are a 2.

There were about 113 facilities on the RPI that contained initial book values of less than \$5,000. Those items are being reviewed by the Center to determine whether or not to combine them with other facilities or remove them from the RPI list. The current policy is to change the RPI after removing those items less than \$5,000.

JET PROPUSION LABORATORY

California Institute of Technology
4800 Oak Grove Drive
Pasadena, California 91109-8099
6/29/03–7/2/03

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Les Dundics
Troy Broussard
Albert Ruiz
Mike Stakem (Photographer)

Center POC:

NASA Representative:

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Jet Propulsion Laboratory
California Institute of Technology
4800 Oak Grove Drive
Pasadena, CA 91109-8099



Figure 11. Jet Propulsion Laboratory

Site RPI Manager:

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California Institute of Technology
4800 Oak Grove Drive
Pasadena, CA 91109-8099

Summary of Site Visit

1. Visit Summary:

The Jet Propulsion Laboratory (JPL) DM visit took place on Monday, June 29, through Wednesday, July 2, 2003. There were 230 items reviewed from the JPL RPI. Of these, 15 items have been removed, five of which were trailers. In addition, two items were added that were brand new storage facilities. The Woodbury Complex is a leased facility not physically located within JPL, nor is it maintained by JPL, and was not assessed.

The JPL DM assessment was completed as scheduled.

Coordination for access to the JPL site was led by Vaji Nasoordeen (CalTech representative for Jet Propulsion Laboratory). CalTech Escorts for the assessment were Steven Moniz and Donald Plagge, who also did double duty as escorts for the photographer. Desi Dundics, Les Dundics, Troy Broussard were the Assessment Team members from Plexus, and Mike Stakem from Plexus was the photographer. There were no RPI issues to resolve other than the two items to be added to the database, which were addressed above.

The visit began with an introduction on the morning of June 30th. The field assessments were completed Wednesday morning, July 2nd. An exit-brief was provided on the morning of July 2nd. In attendance were Bruce Fischer (Facilities Division Manager), Vaji Nasoordeen (Section Manager, Facilities Maintenance and Operations), and Facility Engineers Steven Monie, Donald Plagge, Kenneth Peralta, and Doug Hall.

Overall, the JPL buildings are in very good condition. JPL contains a significant number of unique laboratory, test and development buildings (such as spacecraft assembly facilities, propulsion testing, pyrotechnic storage, Optical Interferometry Development, Mars exploration, etc.) and training and administrative buildings to support these operations. The interiors of the active buildings are all well maintained.

2. Other Comments of Interest:

There are five trailers that are leased (T1721, T1722, T1723, T1724, and T1725). The current intention is to remove these trailers from site at the end of the lease.

Logistics Information

1. General Information (*On the Site*):

The site is in the Pasadena area of California, northeast side of Los Angeles. It is about a 45-minute drive from the Los Angeles Airport, and approximately a 30 minute drive from the Ontario airport, which is closer but has reduced flight availability. There is abundant lodging available in the area, although the roads are rather congested in both the mornings and after work.

2. Directions to the Site:

From the Los Angeles Airport: Travel east on the Century Freeway (105) to the Harbor/Pasadena Freeway (110). Proceed north on the 110 to Pasadena. Exit on Orange Grove Blvd. Travel north (left) on Orange Grove Blvd. to California Blvd. Proceed east (right) on California Blvd. to Pasadena Avenue. Proceed north (left) on Pasadena Avenue to the Foothill Freeway (210). Proceed west on

the 210 to the Berkshire Avenue/Oak Grove Drive exit. Proceed east (right) on Berkshire Avenue to Oak Grove Drive. Proceed north (left) to the Laboratory.

3. Concept of Operations:

There are several NASA sites close to the JPL facility (within 1 ½ hour) that may be assessed during the same visit into the Los Angeles area. These include Palmdale, Dryden Flight Research Center, and Santa Susanna. Table Mountain was assessed as a separate facility and not included in this assessment.

4. Actual Man-Hours Required to assess the Site:

It is estimated that approximately 88 hours were required to assess JPL.

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TABLE MOUNTAIN OBSERVATORY

24490 Table Mountain Road
Wrightwood, California
6/12/03

Plexus Scientific Team Members:
Desi Dundics

Center POC:
Ms. Pam Glatfelter
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Site RPI manager:
Ms. Pam Glatfelter
Facility Operations Manager
(760) 249-3650
glatfelter@tmf.jpl.nasa.gov



Figure 12. Table Mountain Facility Gate

Summary of site visit

1. Visit Summary:

The JPL Table Mountain DM visit took place on Thursday, June 12, 2003. There were 17 items assessed. Of these, one item has been removed from site and should be removed from the RPI. The JPL Table Mountain DM assessment was completed as scheduled.

Coordination for access to the Table Mountain site was led by Pam Glatfelter, Facility Operations Manager, who also was escort during the assessment. Desi Dundics was the Assessment Team member from Equipment Links, Inc. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Pam Glatfelter who has the additional duty as the Table Mountain Real Property Inventory Officer.

The visit began with an introduction on the afternoon of June 12. The field assessments were completed that same afternoon, followed by a short exit brief provided to Pam Glatfelter.

Overall this site is in good condition. The majority of the buildings are brick or block exterior, and with the exception of the Headquarters Building, Building #TM-17, the

buildings are used either in an industrial or a laboratory environment. Being on the top of the mountain situated right next to a ski resort, the site gets considerable adverse weather, both winter and summer. Even though most of the buildings are old, they are well maintained. The greatest impact of the weather is the roads and sidewalks, which show considerable cracks and fracturing on the asphalt roads, and spalling of the concrete surfaces. The site has been approved for \$600K for repair work of the roads, and an additional \$200K for sidewalks and parking areas. This amount for roads and sidewalks has not yet been officially funded. One additional problem that has been identified this past year is related to electrical power fluctuations that have been experienced throughout the site. Southern California Edison recently evaluated the problem and attributed the situation to a need for improved electrical grounding. The JPL facilities group estimate repairs to be around \$21K. This amount also, has not yet been approved or funded.

2. Other comments of interest: The Industrial User Utility Building, Building #TM-15 is located remotely behind the locked fences of the Forest Service. This is a very small building, the size of a single room, and the facility has not been used for at least 18 years. This building was not visited, and assessment ratings are based on the descriptions provided by Pam Glatfelter.

Logistics Information

1. General information: The closest airport to the facility is Ontario, which is approximately a 45-minute drive. From Los Angeles Airport, the driving time is about two hours, all of which is on freeways except for the last 15 miles. Visits during the winter should be avoided otherwise there may be great amounts of snow and ice to deal with.

2. Directions to the site: From any airport in the Los Angeles basin, first make your way to the 10 Freeway and proceed east in the direction of San Bernardino. At the junction with Highway 15, go north towards Las Vegas and Barstow. Follow this to the turnoff onto Highway 138. Turn left (west) onto Highway 138 towards Palmdale and Wrightwood. Take a left onto Highway 2, which should be followed through the town of Wrightwood to the junction at Big Pines Ranger Station. There is a large stone tower at the ranger station, which provides a landmark. Take the first right turn onto Table Mountain Road (sign posted to Ski Sunrise) and follow this road to the ski area. Proceed across the ski area parking lot and stay to the right of the ski lodge where you will find a narrow road and a “Do Not Enter” sign and barricade. Continue up this road which brings you to the front gate of the Table Mountain Facility. The gates are closed at all times for security reasons, but there is a phone at the fence with a direct line to the security guard, who remotely operates the gate to provide access.

3. Concept of operations: This is a relatively small site, and can be assessed in approximately 2-3 hours. For scheduling purposes, the next nearest site which can be combined with this assessment visit is Palmdale or JPL.

4. Actual man-hours required to assess the buildings on the site, excluding the remote Industrial User Utility Building, Building #TM-15: 2.5 hours

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CANBERRA DEEP SPACE COMMUNICATIONS COMPLEX

Kingston, Australia
5/28/03–5/29/03

Plexus Scientific Team Members:
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Center POC:
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Dennis Buck (JPL)
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Figure 13. 70 meter antenna

Summary of Site Visit

1. Visit Summary:

The Canberra Deep Space Communications Complex (CDSCC) DM visit took place on Wednesday, May 28, and Thursday, May 29, 2003. There were 72 items reviewed from the JPL Deep Space Network (DSN) CDSCC RPI. Of these, nine were not found and should be removed from the RPI. Four additional items not reflected on the RPI were found and assessed. The CDSCC DM assessment was completed as scheduled.

Coordination for access to the CDSCC site was led by Neil Newman (NASA representative for South East Asia), Peter Churchill (Center Director), and Bruce Wiley (Site Facility officer). David True (BAE Systems) was the escort. Brian Chopp was the Assessment Team member from Plexus. Resolution of RPI miscellaneous issues was accomplished through coordination between Brian Chopp and Dave True who has additional duty as the CDSCC Real Property Inventory Officer.

The visit began with an introduction on the afternoon of May 28th. The field assessments were completed late May 29th.

Overall, this site remains in excellent condition. Ninety percent of the buildings are comprised of brick with raised seamed roofs requiring little maintenance. The interiors of the buildings are well maintained. The antennas are the maintenance focus at CDSCC as the critical facilities. The 34-meter antennas are like new; the 11-meter antenna is well maintained; and the 70-meter antenna is well maintained with a good schedule of maintenance to address areas (mostly corrosion control and painting) that needed to be addressed on a frequent basis.

2. Other Comments of Interest:

Significant exterior damage remains for the exterior of the Collimation tower and Collimation Tower Building, Building #4, due to a January 2003 forest fire. Functionality for these facilities is restored with the interior of Building #4 remaining relatively unharmed.

Multiple RPI items have been recently renamed and updated by the Center personnel for the RPI. They were assessed under the old RPI number and are as follows: MS12 Electrical – new MS17, MS12 Roads – new MS16, MS12 Sewer – new MS18, MS12 Water Storage – new MS20, and MS12 Water System.

Logistics Information

1. General Information:

The site was about a 30-minute drive from downtown Canberra. Two remote facilities required four-wheel access from CDSCC. One was the Collimation tower, and the other was the water pumping station. Each remote facility required about one hour transit time.

2. Directions to the Site:

From the Sydney International Airport take Princes Hwy South (Rt 66) approx 8km to King Georges Rd (Rt 3). Make a right at King Georges Rd. and travel north approximately 6 km to the Southwestern Freeway (Rt 5). Take the Southwestern Freeway to Canberra for 67 km where it will continue as the Hume Highway (Rt 31). Continue on the Hume Highway for 126 km. The road then continues as the Federal Highway (Rt 31). Take the Federal Highway southwest for 73 km until it changes to Northbourne Ave. Then travel on Northbourne Ave. for five km to Capital Circle Rd. in Canberra. Continue northwest on Capital Circle to Adelaide Ave. Take Adelaide Ave for 2.5 km to Cotter Rd (Rt 5). Continue on Cotter Rd. for 16.5 km and bear left at Paddys River Rd. After 16.5 km on Paddys River Rd take Tidbinbilla Rd. Make a left at Tidbinbilla Rd and travel approximately six km until you reach the CDSCC main gate. Total travel time is approximately three hours and forty-five minutes.

3. Concept of Operations:
Canberra DSN required one site visit and all facilities with the exception of the Collimation tower and water pumping station were located in a close proximity to each other. The Canberra Australia visit was dove-tailed with the HSTDN, Hawaii assessment which allowed for optimization of travel costs.

4. Actual Man-Hours required to assess the Site: 1

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GOLDSTONE COMMUNICATION COMPLEX

Barstow, California

7/17/03-7/18/03

Site Address:

Plexus Scientific Team Members:

Desi Dundics (Lead)

Les Dundics

Paul Benthin (Photographer)

Center POC:

NASA Representative (JPL):

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Site RPI Manager:

Leroy Abeyta

Real Property Index Manager

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Figure 14. Mars 70 M Antenna

Summary of Site Visit

1. Visit Summary:

The DSN Goldstone Communication Complex (Goldstone) DM visit took place on Thursday, July 17 and Friday, July 18, 2003. There were 138 items reviewed from the Goldstone RPI. In addition to these 138 items,

- Four items not on the RPI were found and should be added.
- Eight items are inactive, have been taken over by the U. S. Army, and should be removed from the RPI
- Two items were listed in the RPI twice, the Mars Reverse Osmosis Building and DSS-17.
- Two items were not rated because they represent ground improvements.

- There is considerable confusion on six items because of conflicting numbers used in the RPI and those posted on the buildings. Two items were removed in previous years, and the numbers were reused on other items, but the items were not removed from the RPI causing considerable confusion regarding those items. On other items, numbers are listed with the wrong buildings. These numbers must be reconciled between the building and the RPI otherwise the calculations will not be correct.

The Goldstone DM assessment was completed as scheduled.

Coordination for access to the Goldstone site was led by Anthony Duran Combined Systems Operation Contract (CSOC). Technical escort duties were performed by Dennis Buck (JPL) and Jim Mahoney (CSOC). Desi Dundics and Les Dundics were the Assessment Team members from Plexus, and Paul Benthin took pictures for the cover photographs. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Leroy Abeyta with support from Dennis Buck.

The visit began with an introduction on the morning of July 17. The field assessments were commenced the same day and were completed on the following day. An exit-brief was provided to Anthony Duran, Dennis Buck, Mary Depriest, Thomas Millard and Jim Mahoney on July 18.

The primary function of the Goldstone site is to perform Deep Space Network antenna communications and testing. The site contains eight distinct areas of buildings and activity, and some outlying support buildings. The condition of these areas is mixed.

- The MARS area is active and in good condition.
- The URANUS area is active and in good condition.
- The ECHO area is active and in good condition.
- The PIONEER area is inactive and has been taken over by the Army.
- The APOLLO area is active and is in good condition.
- The MOHAVE area is inactive and should be bulldozed.
- The GEMINI area is mixed. One antenna is active and in good condition and the other antenna has been cannibalized for parts.
- The VENUS area is active and in good condition.

2. Other Comments of Interest:

Three buildings (G-202, G-38, and G-43) have been determined to be seismically unsafe by the State of California, and as a result no longer satisfy the originally intended function. The structures of these items were rated a “1”. Because the combined CRV of these three items is close to \$3M, these three items will generate a significantly large DM number when applied to the model. Consideration should be given to reevaluate the CRV and function of these items.

Logistics Information

1. General Information (*On the Site*):
The site is inside of Army base Ft. Irwin, which is approximately 40 miles from Barstow, California. The terrain is hot, rocky and desert.
2. Directions to the Site:
From the Las Vegas Airport, exit the airport following the signs to Highway 215. Take Highway 215 approximately one mile west to Highway 15 South toward Los Angeles. Once on Highway 15, Barstow is approximately 130 miles. Approximately four miles before Barstow, take the Ft. Irwin Road exit, and follow this road up to the Ft. Irwin security gate. Get a visitor's vehicle pass, and approximately 200 yards inside the gate, take a left to go toward the Goldstone facilities. In approximately eight miles, there will be a NASA security gate.
3. Concept of Operations:
It will take approximately two days to perform the assessment not because of the numbers of buildings, but because the individual sites are so far apart so there will be a lot of driving time. The closest place to find lodging is either the Landmark Inn, right in Ft. Irwin, or a number of hotels in Barstow.
4. Actual Man-Hours Required to assess the Site: 40 hours

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MADRID DEEP SPACE COMMUNICATIONS COMPLEX

Robledo de Chavela, Spain
7/09/03–7/10/03

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Center POC:
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Figure 11. DSS-63 70 meter antenna (1300).

Summary of Site Visit

1. Visit Summary:

The Madrid Deep Space Communications Complex (MDSCC) DM visit took place on Wednesday, July 9 and Thursday, July 10, 2003. A total of 49 items were assessed. Of these, one could not be found; one was deemed not of sufficient value to report on the RPI database but assessed anyway; and 26 new facilities were found and assessed. Additionally, there were six facilities that were listed separately from the MDSCC RPI list; they are large antenna and each has a separate record. Items found on the RPI that had a CRV of less than \$5,000 were deemed not worthy of RPI tracking by MDSCC and will be sent to MDSCC/JPL personnel for deletion from the RPI. The MDSCC DM assessment was completed as scheduled.

Coordination for access to MDSCC was led by Dennis Buck, the primary NASA JPL POC. Additional hotel coordination was provided by Ms. Cindy Jeffries at JPL, who worked with Mr. Gregorio Pasero at MDSCC to ensure security badging and other local arrangements. The MDSCC escort was Mr. Federico Martin, the Facilities Project Officer. Albert Ruiz was the Plexus coordinator and the photographer. The main facility buildings in the center of the complex were assessed followed by the antenna facilities and their support structures. Last to be assessed were the outlying buildings and structures outside of the complex. Resolution of RPI miscellaneous issues was accomplished through discussions on the last day between Albert Ruiz, Mr. Angel Martin and Mr. Federico Martin. The MDSCC “Gold Book”, as described in the previous assessment and their book titled “Real Property Record of Madrid DSCC Buildings and Supporting Facilities” were used to address many of the questions that came up during the assessment.

The visit began with an introduction on the morning of July 9 to Mr. Gregorio Pasero, the MDSCC site director, and Mr. Angel Martin (the Facilities Manager), and Mr. Federico Martin from the facilities maintenance group. The field assessment was conducted in about two days. A short out-brief was provided to Mr. Pasero and others on the afternoon of July 10.

Overall, this site is in good condition.

This site was initially developed in the 1960’s and early 1970’s. The majority of the non-antenna structures were constructed during this time period. Because of this, most of the 2 and 3 ratings were due to age. All of these structures, however, are functional and are being well maintained.

The chilled water distribution system is now completed throughout the complex so most of the buildings and antenna use this system with support or backup by existing local equipment. This should show an increase in the System Condition

Index (SCI) for heating, ventilating, and air conditioning (HVAC) systems at MDSCC.

Structures were reviewed in greater detail and now show higher ratings. This has occurred as a result of complex personnel finding evidence that supports a more functional building or structure. This should increase the SCI for Structure systems at MDSCC. Because some antennas were also seen as having higher structure ratings, the DM estimate will be affected for MDSCC.

2. Other Comments of Interest:

There area a large number of facilities that are not listed on the NASA RPI. These are primarily site infrastructure facilities. NASA should account for them using the NASA class code as the facility description. Also, some of those infrastructure buildings listed should be combined. For example, the three records with NASA class code of 841-50 (potable water wells, etc.) should be combined as one facility number.

The CRVs for many of the facilities are too low. These CRVs may not reflect an adequate replacement value. For example, Facility 843-30 (Fire Protection Water Tank) has two concrete tanks the first of which was built in 1973 for \$9,402 and the second one built “with the same characteristics” in 1992 for \$62,060. This difference in cost reflects the large disparity in CRV and will therefore affect the DM estimate. It is also believed that the CRV for four of the six antennas are too low. As mentioned last year, per staff from JPL, purchase of a new 70 meter antenna for example would likely cost between \$70 and \$80 million.

Some of the antenna support facilities should be separated in the RPI from the antenna they support. For example, Building #1400 and Building #1800 can be accounted for better if they are assessed differently. Without having adequate documentation that shows whether they are part of the RPI record for the antenna they support, it is difficult to be sure whether to access them as part of the antenna. Another example is the fuel pumping station for Petrol. It is actually defined as a line item in the Building #100 Real Property Record. But it should be listed separately.

Logistics Information

1. General Information (*On the Site*):

MDSCC can be reached by automobile in about one hour from central Madrid. Hotel rates and accommodations are arranged through Ms. Cynthia Jeffries who provides the visitor with a form that asks for specific flight information and requested hotel accommodations for the visit.

2. Directions to the Site:

From central Madrid take highway N-V west and then M-501 west to San Martin de Valdeiglesias; take a right at KM marker 44 to M-512. Take a right at KM marker 19 to M-531 east then travel 11 kilometers to the complex.

3. Concept of Operations:
All of the facilities were assessed starting from the center of the complex where most of the control, office and maintenance buildings are located. Then the outlying antenna and their support facilities were visited. Finally the perimeter and off-complex structures were assessed. Using a site map that shows building numbers was helpful for the assessment. Taking the Real Property Record book to the different facilities was also helpful in identifying dates and scope of rehabs and upgrades.
4. Actual Man-Hours Required to assess the Site:
48 hours (for travel, assessment and for the photo taking).

Lessons Learned or Problems Encountered

Plexus and NASA spent about four hours trying to properly identify items not on the MDSCC RPI that were listed as “Real Property – other structures and facilities” or general utilities. These general items proved to be a mix of land, active facilities, and utilities. All of the 21 items were resolved and appropriately assessed.

Looking through the Real Property Record book documents for the general use facilities proved to be critical in identifying where they are located and/or the scope of area they encompass before they could be properly assessed. The comments in the DM database now contain valuable “where is it” or “what is it” information for those facility types.

JOHNSON SPACE CENTER

Houston Texas, USA
7/21/03–7/25/03

Plexus Scientific Team Members:

Kent Kester
Troy Broussard
Keith Burnikell
Troy Strasters
Jason Gulak (Photographer)

Center POC:

NASA Representatives:
Beth Humphries
JA COD Assistant Director
Mike Scott
JA COD Staff

NASA Escorts:

Bill McCormick
JA COD Electrical Branch FE

Gene Hajdik
JA COD Mechanical Branch FE

Site RPI Manager:

Marylyn Blevins (DynCorp)



Fig. 16 Gate entrance

Summary of Site Visit

1. Visit Summary:

The Johnson Space Center (JSC) DM visit took place Monday, July 21 through Friday, July 25, 2003. There were 397 items reviewed from the JSC RPI. Included in this were records at both Ellington Field and Sonny Carter Training Facility. “JSC 950 Remote Lunar Sample Storage Facility” is not located at this site. It is located at Brooks Air Force Base in San Antonio, Texas. Facility 950 is a leased building from the USAF and does not belong to NASA. Only one additional facility was found that was not on the RPI, construction was just finished on Facility 272.

Mike Scott led coordination for our access to the NSBF site. Kent Kester, Troy Broussard, Keith Burnikell, and Troy Strasters were the Assessment Team members from Plexus. Jason Gulak was the Plexus facility photographer. Resolution of RPI miscellaneous issues was accomplished through coordination

between Kent Kester and Marylyn Blevins who has the duty as the JSC Dyncorp Real Property Inventory Officer.

The field assessments were completed late July 25, 2003. In-briefs and out-brief were offered to JSC management who pleasantly declined the need for them.

Overall, this site is in fair condition. The buildings are made of a mix of prefabricated metal, brick with raised seamed roofs, and peaf panel walls requiring little maintenance. The interiors of the building are in fair shape, some better than others. Utility plants and electrical switchgear and distribution facilities were showing significant signs of deterioration.

Logistics Information

1. General Information:

The site was about a 30-minute drive from downtown Houston, Texas. Two remote facilities required off site trips to assess. One was Ellington Field, and the other was the Sonny Carter Training Facility. Each remote facility required about 15 minutes of transit time.

2. Directions to the Site:

JSC is located east on NASA Road One from Interstate Highway 45, South of Houston Texas. The Ellington Field location is just north of JSC on State Hwy 3. The Sonny Carte Training Facility is located on the back side of Ellington Field on Space Center Boulevard.

3. Concept of Operations:

Two teams of two men each can assess this site in a week. One team takes the main mall area, while the other team takes all the outlying areas and the off-site visits to Ellington Field and Sonny Carte Training Facility. The Mall area or 0-100 buildings are extremely large, multi-story facilities that require a significant effort to cover, while the other facilities are much smaller. Roofs are a very touchy issue with security and coordination of this must be completed in advance. A security office will have to accompany the teams to inspect the roofs; advanced scheduling of this is required. The Thermal Testing Area (TTA) will require coordination with safety training in Building #350. The Sonny Carter Training Facility will also require special safety training and escorts that will have to be coordinated in advance. Notification to Mission Operation Division (MOD) prior to visits to Buildings 5, 7, 30A, 30M, 30S, 31, 31N, and 35 are strongly suggested to assure no delays.

4. Actual Man-Hours Required to assess the Site: 230 hours (for the assessment, and photos)

PALMDALE INDUSTRIAL FACILITY

Palmdale, California

7/10/2003

Plexus Scientific Team Members:

Desi Dundics (Lead)

Les Dundics

Paul Benthin (Photographer)

Center POC:

NASA Representative:

W.T. (Tom) Franklin

Manager, Palmdale Facilities

Core Lean Team

Operations Support

(661)272-4357

william.t.franklin@boeing.com

The Boeing Company

1500 East Avenue M

Site 1 MC PL-46

Palmdale, CA 93550



Figure 17. Palmdale Facility, Shuttle Orbiter Final Assembly Building, #150

Site RPI Manager:

W.T. (Tom) Franklin

Manager, Palmdale Facilities

Core Lean Team

Operations Support

(661)272-4357

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The Boeing Company

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Site 1 MC PL-46

Palmdale, CA 93550

Summary of Site Visit

1. Visit Summary:

The Palmdale DM visit took place on Thursday, July 10, 2003. There were 50 items reviewed from the RPI that belong to the USAF, and eight items reviewed from the RPI that belong to NASA. All of the NASA items were present and evaluated. Three of the USAF items are no longer located on the site.

The Palmdale DM assessment was completed as scheduled.

Coordination for access to the Palmdale site was led by Tom Franklin (Boeing representative for Palmdale), who also performed duties as the technical escort. Desi Dundics and Les Dundics were the Assessment Team members from Plexus, and Paul Benthin was the photographer for the cover photographs. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Tom Franklin who is the local Real Property Inventory Officer.

The visit began with an introduction on the morning of July 10. The field assessments were completed the same day, and an exit-brief was provided to Tom Franklin following the field assessments.

Overall, the Palmdale site is in good condition. Palmdale contains buildings to support building the shuttle, fabricating parts for the shuttle, and administrative offices to support the operation. The interiors of the active buildings are all well maintained.

2. Other Comments of Interest: None.

Logistics Information

1. General information (*On the Site*):

The site is very close to the city of Palmdale, California, which is approximately a one and a half hour drive north from Los Angeles.

2. Directions to the Site:

From the Los Angeles Airport: Exit the airport onto Highway 101 north. Then take 170 North toward Sacramento. Merge onto I-5 North. Merge onto CA-14 north toward Palmdale. The total distance is approximately 62 miles.

3. Concept of Operations:

When assessing the Palmdale facilities, it should be coordinated so that the assessment is performed at the same time as the DFRC facilities. These two facilities are located within 40 minutes of each other.

4. Actual Man-Hours Required to assess the Site: 8 hours

WHITE SANDS TEST FACILITY

12600 NASA Road
Las Cruces, NM 88012
6/23/03-6/26/03

Plexus Scientific Team Members:

Kent Kester
Wayne Powell

Center POC:

NASA Representative:
John Villegas
NASA O&M Manager

Site RPI Manager:

Bryan Merrell
L&M Technologies RPI Manager



Figure 18. Building #100

Summary of Site Visit

1. Visit Summary:

The DM assessment also included the White Sands Complex sites TDRSS1 and TDRSS2, and the Space Harbor Facilities alternate space shuttle landing runway and astronaut training grounds. An informal in-brief was given to NASA site management on current DM status and updated practices for this year's assessment. NASA Engineering Chief, Barry Plante was very receptive of the DM concept. Mr. Plante requested that Plexus look into the significant difference between the NASA White Sands Test Facility (WSTF) DM value published last year of 10 million dollars and the NASA White Sands Test Facility Backlog of Maintenance and Repair (BMAR) value reported last year of \$20M dollars.

Upon completion of the site visit team members met with Mr. Plante and expressed our appreciation of the extremely knowledgeable and supportive escorts that were provided. They were able to shed some light on Mr. Plante's question on the delta of the two cost reports. Several facilities last year were assessed with a 5 for systems that did not exist. This was a mistake that Plexus caught after the 2002 assessment was completed and was not able to correct until our assessment this year. The correction of these 5's to 0's should help to change some of the delta and bring the cost closer. The team did express, however, that we did not expect the cost to match his detailed engineering study that was performed in the past.

Lessons Learned and Problems Experienced

Real Property Records JSC WSTF Hanger1 and Hanger 2 at El Paso Airport:
 Two aircraft hangers with office space that are not owned by NASA, but leased from the City of El Paso have a recorded CRV of \$0. Is CRV the estimated value to purchase a similar facility or the value of the new lease for similar facilities? In a conversation with program manager, Larry Larosse, the ability to lease/purchase other space was all but non-existent at the time. The attached document is a scanned copy of a professional estimate that Mr. Larosse provided for review in looking at the potential CRV for this facility.

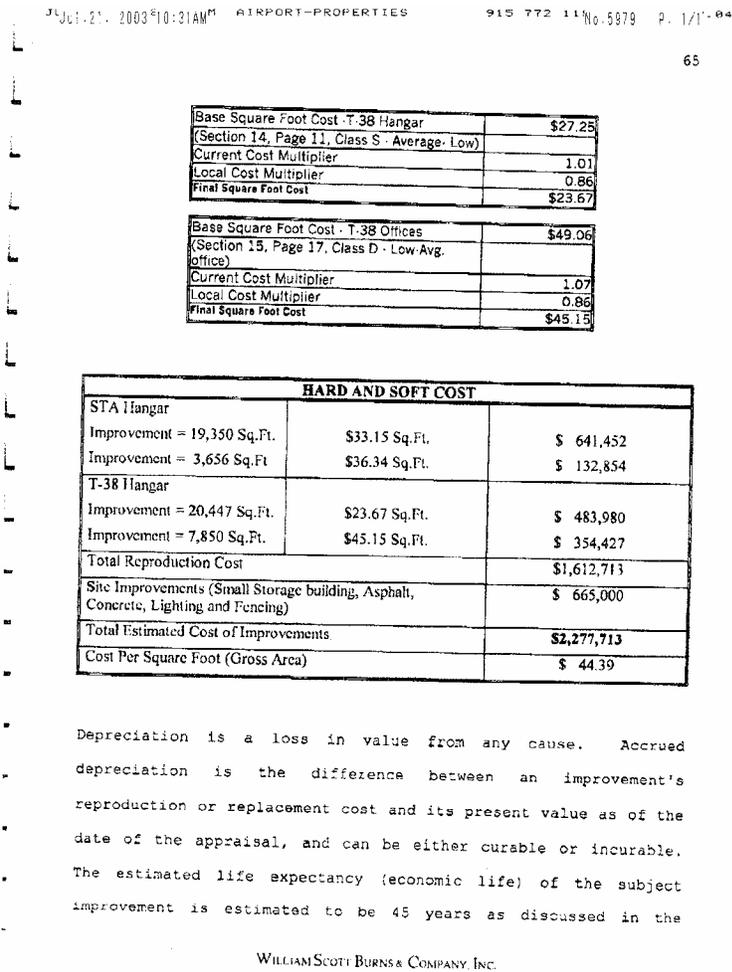


Figure 19. Lease for airport hangers

Portable buildings (such as the one shown in the photo below) at WSTF are not considered as real property if the original purchase/installation cost is below \$5,000. RPI procedures and cost of purchase of these items shown to us during

the visit verify this point. Portable buildings, such as this, do not show up on the RPI list managed by WSTF personnel. The WSTF fire and rescue services have taken it upon themselves to assign building numbers and put these numbers on the buildings. Because of this visible number the buildings were picked up in the last DM visit and added to the Plexus report. These buildings and their repairs are covered at WSTF under their NASA Equipment Management System (NEMS) Personnel Property account at this time. A decision will have to be made as to which account these units are to be managed under. These are not much different from portable metal conex trailers. They have no electrical, plumbing, HVAC, etc. They are used only for storage of site materials and are moved on occasion from location to location if needed. If listed on RPI and on NEMS the financial issue is one of double dipping.



Figure 20. Portable building T106A

TDRSS 1 Facility 26, a building leased by the USAF, was off limits for visiting or photographing. The team was strongly encouraged to make sure that they did not even catch a portion of this facility in the background of the other photos. The Plexus team was able to assess the facility by interviewing their escort, Mr. John Villegas.

Last year the DM team found several facilities that were not in the RPI database. The RPI manager that escorted the team this year brought along detailed reports and files that helped to identify some of these facilities as part of a larger account on the RPI. As a result Plexus removed from the RPI database those facilities that were found last year but included in other facilities.

Logistics Information

1. The NASA WSTF is located approximately 10 miles east of Las Cruces, New Mexico on HWY 70. Travel by air to WSTF is booked through the El Paso, Texas Airport that is 45 miles south of Las Cruces, NM on Interstate 10. The TDRSS 1 and TDRSS 2 sites are both on the WSTF property and within site of the main gate. TDRSS 1 and 2 are listed now as JSC real property, but plans now exist to return them to the Goddard RPI soon. The Space Gateway System is located on the White Sands Missile Range approximately a 45-minute drive to the West of WSTF on HWY 70. White Sands Missile Range is a military testing range and access can be dependant upon testing activities on the range at that time. Advanced planning by our WSTF escorts was crucial in our access to this area.
2. Actual Man-Hours Required to assess the Site: 80 hours

KENNEDY SPACE CENTER

Kennedy Space Center, Florida
5/21/03 – 7/31/03

Plexus Scientific Team Members:

(Subcontract to Nelson Engineering Co.)

Troy Strasters (site lead)

Carrie Seringer

Mary Chambers

Kyle Kendall

Tiffany Martin

Matt McQuinn

Jim Miles

Mario Peralta

David Ratliff

Chris Ruggeri

Chrissy Holtman



Figure 21. Vehicle Assembly Building

Center POC:

Mr. Jim King, NASA,
James.R.King@nasa.gov,
(321) 861-2210

Site RPI Manager:

William Stoecke

Space Gateway Support (SGS) under contract to NASA on the Joint Base Operations Support Contract (JBOSC)

Contractors:

United Space Alliance operates the shuttle processing facilities under a contract Space Flight Operations Contract (SFOC) to NASA. The key site representative for the deferred maintenance assessment from United Space Alliance is Gail Fazio.

Boeing operates the payload processing facilities under a contractor (CAPPS) arrangement to NASA. The key site representative for the deferred maintenance assessment from Boeing is Randy O'Dell.

SGS maintains nearly all facilities not operated by USA or Boeing. In some instances, maintenance responsibility is shared between SGS and another contractor within a facility. The key site representative for the deferred maintenance assessment from SGS is Ray Tuttle.

Summary of Site Visit

1. Visit Summary:

The Kennedy Space Center (KSC) DM visit took place from Wednesday, May 21 through Thursday, July 31, 2003. There were 1010 items in the RPI database

supplied by NASA Headquarters that were reviewed and validated. Additional facility listings were added from the local KSC RPI database for reconciliation with the NASA headquarters (HQ) database and to ensure that all NASA facilities were assessed. Of the total 1053 facilities assessed, there were six facilities that could not be physically found, principally due to demolition or removal. Several assets had changed functions where the category code of the facility no longer matched its current use. A large number of facilities were discovered to have incomplete facility data, such as current CRV or date built.

Coordination for the KSC site visit was performed by Mr. Jim King of NASA, KSC. Mr. King provided a site introduction briefing at the kick-off meeting. The DM assessment was lead by Mr. Troy Strasters of Nelson Engineering Company as a subcontractor to Plexus Scientific. The DM assessment team was provided excellent support from all contractor staff at the site. Individual facility managers were contacted before assessing each facility.

The visit began with an introduction on the morning of May 20. The field assessments were completed by July 31, 2003. An out-brief was provided to Mr. King, other NASA representatives and facility contractor representatives on August 8, 2003.

Overall, the site is in fair to good condition. A large amount of the site facilities were constructed during the 1950's and 60's. As such, the facilities are relatively old and there are maintenance issues associated with an overall aging infrastructure. It is believed that the maintenance issues are more a reflection of budget constraints rather than performance issues. The various staffs of the contractor organizations have a good understanding of their facilities, a good overall maintenance program and proper plans and projects in place to replace/repair various items based on funding availability.

2. Other Comments of Interest:
“ID Only” facilities, while having a minimal impact individually, may have a collective impact on the overall model due to the large number of items. Recommend further investigation into the aggregate CRV value of the collective group of facilities, and the impact of that value to the DM model, to ensure the accuracy of the model is not compromised.

Logistics Information

3. General Information:
The site is approximately 45 minutes from downtown Orlando, FL. All KSC facilities are located within the immediate area of the Kennedy Space Center.
 4. Directions to the Site:
The site is best accessed exiting Interstate 95 at Highway 50, heading east. Turn east onto Highway 405 (Columbia Parkway) and follow directly to the Kennedy Space Center.
-

5. Concept of Operations:

The assessment team lead assigned the assessment personnel a grouping of facilities to be reviewed and assessed. Due to the logistical complexity of assessing a large numbers of facilities across several maintenance contractors, the team members contacted individual facility managers to provide maintenance history and access to facility spaces. Contractor engineers were also contacted prior to assessing significant facilities such as the Vehicle Assembly Building to ensure adequate data was collected.

6. Actual Man-Hours Required to assess the Site:

It is estimated that the actual man-hours required to walk down and review the facilities were 300 man-hours.

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LANGLEY RESEARCH CENTER

Hampton, Virginia 23681
6/23/03–6/26/03

Plexus Scientific Team Members:

Albert Ruiz
Dan Geldermann
Brian Chopp
Aaron Anderson (Nelson Engineering)
Matt Young (photographer)

Center POC:

Bert Sawyer
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NASA Representative:

Brad Balls, (Photographer, Maps)
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Site RPI Manager:

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Contractor:

Al Mignogna
Johnson Controls, Incorporated (JCI)
(757) 864-4930
a.m.mignogna@larc.nasa.gov

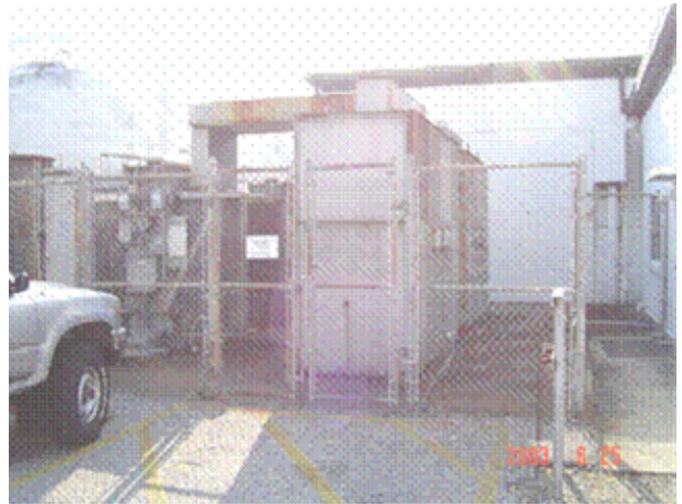


Figure 22. Substation Number 3.

Summary of Site Visit

1. Visit Summary:

The Langley Research Center (LaRC) DM visit took place from Monday, June 23 through Thursday, June 26, 2003. A total of 393 items were assessed. Of these, two were no longer present and four new facilities were found and assessed. Seven have a CRV of less than \$5,000 as reported on the RPI database, but were assessed anyway. Items with a CRV of less than \$5,000 will be sent to LaRC personnel for deletion from the RPI. The LaRC DM assessment was completed as scheduled.

Coordination for access to LaRC was led by Mr. Bert Sawyer, the primary NASA Langley POC, and Mr. Al Mignogna, the JCI contract lead. Escorts included Terry Sweet, Larry Harris, and Frank Beams from JCI. Plexus team members were Albert Ruiz (Plexus Lead), Brian Chopp, Dan Geldermann, Aaron Anderson (Nelson Engineering), and Matt Young as the photographer. Two teams of two Plexus/Nelson Engineering employees each accompanied by LaRC/JCI escorts completed the assessment. The photographer was accompanied by the third escort. One team focused on the southern section of the Center using Langley Boulevard as the dividing line while a second team focused on the northern section. The photographer worked west to east at the Center. In-depth review of RPI miscellaneous issues was accomplished through discussions arranged by Al Mignogna; they involved various members of the maintenance organization.

The visit began with an introduction on the morning of June 23 to Mr. Bert Sawyer and many members of the facilities maintenance community including JCI personnel. The field assessments were conducted from Monday, June 23, through Thursday, June 26. A short out-brief was provided to Mr. Bert Sawyer, the LaRC Facilities Branch Head, and others on the afternoon of June 26.

Overall, this site is in fair condition due to the following reasons:

- There is old electrical equipment throughout the site (substations, panels, etc.). There is a large mix of old and new equipment at substations and throughout the Center.
- The HVAC is generally old throughout the site but there have been noticeable upgrades made to many of them.
- The ratings for the trailers will show a much higher level not because the DM on them is better but because the rating criterion has changed.

There are a number of buildings that have gone through renovations since the last assessment. The interiors of the building are well maintained. Several facilities are operated and maintained by another entity such as the USAF or Old Dominion University and have been identified in the database. This is especially true of the airfield operations.

2. Other Comments of Interest:

LaRC believes that the DM condition rating and DM estimate for the electrical systems is a substantial issue. LaRC indicated that the DM model shows a difference six times higher in DM dollars estimated compared to the Center's estimate. However, the Center indicated that the assessment rating for electrical systems is comparable to their estimate. In fact LaRC sees that the ratings to most of the other systems are correct.

In one case, the CRV of many of the facilities built before 1970 seems low. In another case either the CRV seems too high or the Unit of Measure (UOM) is not

sufficient to validate the CRV. These high CRVs tend to place too much CRV weight on facilities that do not conform to the DM model.

Most wind tunnel support facilities listed on the RPI have a CRV of \$0. Usually those facilities are identified with a letter of the alphabet at the end of the facility number. The primary wind tunnel facilities contain the total CRV from the sum of the CRVs of the support facilities, plus that of the wind tunnel facility.

After discussion with Ms. Angie Brown from the Real Property Office (RPO), it was determined that many of the issues addressed last year and many of the issues uncovered this year will be difficult to change despite reasonable recommendations. Much of the real property documentation prior to 1995 is not available to support making the recommended changes. Because of this fact, it is difficult to justify changing the RPI database (and especially CRVs) without using a procedure that is not in the RPI Manual to correct these problems.

Logistics Information

1. General Information (*On the Site*):

LaRC can be reached by automobile in about 2.5 hours from Alexandria, VA. From a Hampton, VA hotel it takes about 15 minutes to get to the main base gate. Hotel rates during the summer are about \$100 per night. LaRC is physically within the Langley Air Force Base perimeter.

2. Directions to the Site:

From the north take IH 95 south. Merge onto IH 295 to Hampton, VA. Take IH 64 east; follow IH 64 east to exit 256B. Merge onto Victory Boulevard east and then take a right onto VA-134 south.

From the south travel north on IH 64; follow IH 64 to exit 261B; follow VA-134 north for five miles then follow the signs to NASA.

3. Concept of Operations:

JCI is the primary contractor responsible for facility maintenance to the majority of the buildings, so they are the key to providing access to buildings. They provided a pre-planned route for each team to take. Basically they split the buildings between those that are north of Langley Boulevard and those that are south. On the last day, the team with additional time available went to the eastern corner of Langley Air Force Base to assess those NASA facilities. Using maps that show building numbers was helpful to finding many of the facilities. Each team should take a copy of a map with them during their area assessments.

4. Actual Man-Hours Required to assess the Site:

It took 122 hours to perform the assessment, and another 46 hours to take the photographs. One individual from Nelson Engineering, Aaron Anderson, assisted

in the assessment. Adding the number of hours he worked increases the total time of the assessment to 156 hours.

Lessons Learned or Problems Encountered

Albert Ruiz spent about six hours with the maintenance supervisors familiar with the condition of those “general utility” facility items on the LaRC RPI. Those facilities can be easily identified by their number type; they are listed as three numbers followed by a dash followed by two additional numbers. This numbering type reflects the NASA class number used. Properly identifying the location and/or the scope of area these “general utilities” encompass was important to adequately assessing them. The facility comments in the DM database now contain valuable “where is it” or “what is it” information for those facility types.

MARSHALL SPACE FLIGHT CENTER

Huntsville, Alabama

7/14/03 – 7/17/03

Plexus Scientific Team Members:

(Subcontract to Nelson Engineering Co.)

Blain Nelson (site lead)

Mary Chambers

James Miles

Shad Wilson

Center POC:

Mr. Tim Corn

NASA

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(256) 544-9451

Mr. Kevin Primm

NASA

Kevin.L.Primm@nasa.gov

(256) 544-6827

Site RPI Manager:

Ms. Debbie Hendon

NASA

Contractor:

EG&G provides facility operations and maintenance support services to MSFC under the Center Operations Support Services (COSS) contract. The supervisor of the EG&G maintenance engineering group from which support was obtained is Mr. Rhett Jones. EG&G staff members who primarily assisted with the visit included William Berry, Gene Keener and Alvin Campbell.



Figure 23. Building #4476

Summary of Site Visit

1. Visit Summary:

The Marshall Space Flight Center (MSFC) DM visit took place between Monday, July 14 through Thursday, July 17, 2003. There were 289 items in the RPI database that were reviewed and/or validated. The RPI was generally accurate for true facilities. However, the assets in the miscellaneous category of roads, utilities and similar non-facility items were difficult to properly account for due to an overall issue from the original asset construction and transfer from the Army Corps of Engineers at Redstone Arsenal.

Coordination for the MSFC site visit was performed by Mr. Kevin Primm of NASA. Mr. Primm provided a site introduction briefing at the kick-off meeting. The DM assessment was lead by Mr. Blain Nelson of Nelson Engineering Co. as a subcontractor to Plexus Scientific. The DM assessment team was provided excellent support from the EG&G staff at the site. Review and resolution of any RPI issues was performed by Blain Nelson along with Ms. Debbie Hendon of NASA at MSFC.

The visit began with an introduction on the morning of July 14. A formal in-brief was conducted for the MSFC NASA facilities staff. The field assessments were completed during the morning of July 17. An out-brief was provided to Mr. Corn and other NASA representatives in the morning of July 17.

Overall, the site is in very good condition. It is one of the better maintained sites that we have observed during the performance of DM assessments. However, there is still evidence of lack of facilities maintenance funding and the facility looks somewhat aged – more in architectural style than facility condition. A large amount of the main site infrastructure was constructed by the US Army Corps of Engineers as part of Redstone Arsenal and either transferred to MSFC or still remains under the operations and maintenance (O&M) control of the Army under support agreements to NASA. This complicates the maintenance approach, maintenance costing and deferred maintenance assessments since NASA may be requested to fund large system repairs for infrastructure – such as electrical power and steam distribution systems - even though the ownership of these systems is not reflected in NASA property records since the US Army “own” the systems.

2. Other Comments of Interest: None.

Logistics Information

1. General Information:
The site is about a 10 minute drive due west from downtown Huntsville. The MSFC site includes two primary areas: the main industrial complex, which includes the labs and support facilities, and the test area. In addition, there is a very remote facility (old Quonset hut storage shed and storage yard) that is in a different portion of the Redstone Arsenal and was difficult to locate.
 2. Directions to the Site:
The site is best accessed using US 565 from either the west or east. The city of Huntsville is east of the site and the Huntsville Airport is west of the site. The main gate to MSFC through the Redstone Arsenal is well marked from the freeway.
 3. Concept of Operations:
The assessment team lead assigned the assessment personnel a grouping of facilities to be reviewed and assessed. The team members were accompanied by
-

EG&G personnel to all facilities in order to provide maintenance history and access to facility spaces. At the completion of each day, the assessment team coordinated the days' accomplishments and assignments were made by the team lead for the following day.

4. Actual Man-hours Required to assess the Site:

It is estimated that the actual man-hours required to walk down and review the facilities were 120 man-hours.

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BRIGHAM CITY, UTAH

Brigham City Utah

6/25/03

Plexus Scientific Team Members:

Desi Dundics (Lead)

Desi Dundics (Photographer)

Center POC:

NASA Representative:

Paul Peterson (Contractor - ATK)

Manager, Plant Services

(435) 863-6916

[*Paul.Peterson@ATK.com*](mailto:Paul.Peterson@ATK.com)

Alliant Technologies

P.O. Box 707

Brigham City, Utah 84302

Site RPI Manager:

Ms. Debbie Hendon

NASA

Summary of Site Visit

1. Visit Summary:

The Alliant Technologies (ATK)-Brigham City, Utah DM visit took place on Wednesday, June 25, 2003. There were two items reviewed from the ATK RPI. These two items are basically large, metal exterior garages that store NASA shuttle booster sections filled with solid fuel.

Until several years ago, both garages had individual and separate HVAC systems located immediately to the side of each garage. The heating portions of these systems were removed and in their place were substituted heating coils and a direct connection to the site steam system and the local boiler building. The original ductwork and blower remain and continue to function. The boiler building and the steam piping to the buildings are owned and maintained by the contractor.

The ATK DM assessment was completed as scheduled.

Coordination for access to the ATK site was led by Paul Peterson (ATK, Manager of Plant Services). Darrel Price (ATK, Maintenance Planner) was the technical



Figure 24. NASA Storage Sites at Brigham City, UT



Figure 25. NASA Storage Building T-77



escort, and John Hull (ATK, Financial Analyst) also accompanied the team to satisfy site camera restrictions. Desi Dundics was the Assessment Team member from Plexus, who also acted as photographer.

The visit began with an introduction on the morning of June 25. The field assessments were completed the same day and an exit-brief was provided to Darrel Price the afternoon of June 25.

Overall, the ATK items are in good condition. The garages were both built in 1980, with the heating portion of the HVAC systems replaced as described above. Everything about the garages was “good” except the electrical and HVAC, which were downgraded to “fair” due to age considerations.

2. Other Comments of Interest:

There appears to be slight naming convention confusion for these two buildings. The numbers on the buildings are “T-77” and “T-78”, which were the same numbers entered on the 2002 DM Assessment. The RPI has these items listed as “1” and “2”. As a result, the assessor’s list has these items listed both ways, and therefore duplicated. The CRV information is listed under items “1” and “2”, and the ratings and DM Cat Codes are listed under buildings “T-77” and “T-78”.

Logistics Information

1. General Information (*On the Site*):

The site is in somewhat of a desert environment approximately 20 miles west of Brigham City, Utah. It is about a 90 minute drive from the Salt Lake City Airport.

2. Directions to the Site:

From the Salt Lake City Airport: Exit the airport and follow the signs for Ogden. The signs will lead to Highway I-215 going north, which runs parallel to Highway I-15. I-215 runs into I-15. Continue north past Ogden to exit 368, which is the third Brigham City exit. Take route 13 west to Corinne. At the fork in the road bear left onto Route 83 west to the Promontory Plant. The rocket display will identify the visitor parking lot for the Administration area. Go into the main entrance (Building #A-3) and the receptionist in the lobby will provide the visitor’s badge.

3. Concept of Operations:

This is a remote site that is not near any other NASA site that is assessed for DM. Whether the assessment is performed as a “stand-alone” trip or performed “en-route” to another assessment site, it will still take a full day to assess this site because of the air travel to Salt Lake City and subsequent driving time to the Promontory Plant.

4. Actual Man-Hours Required to assess the Site: two hours, including badging and site travel.

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MICHLOUD ASSEMBLY FACILITY

Michoud, Louisiana

6/30/03 – 7/03/03

Plexus Scientific Team Members:

(Subcontract to Nelson Engineering Co.)

Blain Nelson (site lead)

Aaron Anderson

Wayne Powell (Plexus Scientific)

Center POC:

Mr. Ernie Graham

NASA

Ernest.M.Graham@nasa.gov

(504)257-2619

Site RPI Manager:

Michael Newbold

Lockheed Martin under contract to NASA



Figure 27. Building #103

Contractor:

Lockheed Martin operates the MAF under a government-owned, contractor-operated (GOCO) arrangement. The key site representatives for the deferred maintenance assessment from Lockheed Martin were:

Steve Ehrlicher

Keith Marx

Kelly Easley

Summary of Site Visit

1. Visit Summary:

The Michoud Assembly Facility (MAF) DM visit took place from Monday, June 30 through Thursday, July 3, 2003. There were 181 items in the RPI database that were reviewed and/or validated. Of these, there was one that could not be physically found. The RPI was generally accurate. There were a few assets that had changed functions where the category code of the facility no longer matched its current use. Fifty six (56) of the RPI items are transformers and substations that are either associated with specific facilities or with the MAF-wide power distribution system. Recommendations were made to the MAF staff to consider correcting the category codes that no longer reflect the mission of the facilities and to integrate the transformer and substation assets into either the facility or base-wide system so they are not carried and managed as separate assets.

Coordination for the MAF site visit was performed by Mr. Ernie Graham of NASA, MSFC, MAF. Mr. Graham provided a site introduction briefing at the

kick-off meeting. The DM assessment was lead by Mr. Blain Nelson of Nelson Engineering Co. as a subcontractor to Plexus Scientific. The DM assessment team was provided excellent support from the Lockheed Martin staff at the site. Assessment personnel were accompanied by Mr. Keith Marx and Mr. Kelly Easley for all facility reviews. Review and resolution of any RPI issues was performed by Blain Nelson along with Keith Marx and Mr. Mike Newbold of Lockheed Martin.

The visit began with an introduction on the morning of June 30. The field assessments were completed during the afternoon of July 2. An out-brief was provided to Mr. Graham, other NASA representatives and the Lockheed Martin contractor in the late afternoon of July 2.

Overall, the site is in good condition. A large amount of the main site facilities – including the largest facility on the site where the Space Shuttle External Tanks are assembled (Building #103) – were constructed during World War II and used to manufacture Higgins boats. As such, the facilities are relatively old and there are maintenance issues associated with an overall aging infrastructure. It is believed that the maintenance issues are more a reflective of budget constraints rather than performance issues. The Lockheed Martin staff has a good understanding of their facilities, a good overall maintenance program and proper plans and projects in place to replace/repair various items based on funding availability.

2. Other Comments of Interest:

Tropical Storm Bill hit the Michoud area on June 30, 2003. A result of the storm was that a large scaffolding set was knocked over onto a set of power lines near Facility 451 and 452. The power system in the area was not safe during the DM assessment. As such, Facilities 451 and 452 were not reviewed this year. Based on discussions with the Lockheed Martin personnel, these facilities were not upgraded, improved or modified over the past year. It was believed that last year's data is still accurate, and that is what was used in this year's DM assessment without having physically reviewed the facilities.

Logistics Information

1. General Information:

The site is about a 20 minute drive due east from downtown New Orleans. All MAF facilities are located directly within the fenced MAF compound and there are no remote facilities that need to be accessed from other areas.

2. Directions to the Site:

The site is best accessed using Interstate 10 east to US 510 south. From 510, take the Almonaster exit (Exit 2C) and go east on Old Gentilly Road to the main MAF gate.

3. Concept of Operations:

The assessment team lead assigned the assessment personnel a grouping of facilities to be reviewed and assessed. The team members were accompanied by Lockheed Martin personnel to all facilities in order to provide maintenance history and access to facility spaces. At the completion of each day, the assessment team coordinated the day's accomplishments and the team lead made assignments for the following day.

4. Actual Man-Hours Required to assess the Site:

It is estimated that the actual man-hours required to walk down and review the facilities were 65 man-hours.

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SANTA SUSANA FIELD LABORATORY

Simi Valley, California
7/14/03 - 7/16/03

Site Address:

*C/o The Boeing Company
6633 Canoga Avenue
P.O. Box 7922
Canoga Park, CA 91309-7922*

Plexus Scientific Team Members:

*Desi Dundics (Lead)
Les Dundics (On-site)
Paul Benthin (Photographer)*

Center POC:

NASA Representative (Boeing):
*Peter (Mike) Daley
(818) 586-9052
peter.m.daley@boeing.com*

Site RPI Manager:

*Steve Sitlington
(818) 586-2928
steve.c.sitlington@boeing.com*



Figure 28. Alpha Test Stand

Summary of Site Visit

1. Visit Summary:

The Santa Susana Field Laboratory (SSFL) DM visit took place on Monday, July 14 through Wednesday, July 16, 2003. There were 141 items reviewed from the SSFL RPI. Of these, there were six items that have been removed. In addition, there are twelve items that are identified as land improvements that were not rated. Also, there were eight items that were building improvements or additions to an existing item and which are difficult to positively separate the improvement from the original item. It is recommended that consideration be given to combining these. And finally, there was one item (Maintenance Construction Shop, #796) that was not on the RPI and should be added.

The SSFL DM assessment was completed as scheduled.

Coordination for access to the SSFL site was led by Mike Daley (Boeing representative for SSFL), who also performed duties as the technical escort.

Also escorting the team were Norma Medina (Boeing, Product Support Technical Advisor) and Kevin McGuigan (Boeing, Property Management Specialist). Desi Dundics and Les Dundics were the Assessment Team members from Plexus, and Paul Benthin took pictures for the cover photographs. Resolution of RPI miscellaneous issues was accomplished through coordination between Desi Dundics and Boeing Representatives Mike Daley with support from Steve Sitlington.

The visit began with an introduction on the morning of July 14. The field assessments were commenced the same day and continued for two more days. An exit-brief was provided to Mike Daley, Norma Medina, Kevin McGuigan, and Stu Kramer on July 16.

The primary function of the SSFL site is to perform rocket engine assembly and testing, and the site contains seven distinct areas of buildings and activity. The condition of these areas is mixed.

- The ALPHA test site area is still active, and is in good to fair condition.
- The BRAVO test site area is still active, and is in good to fair condition.
- The COCA test site area is inactive.
- The DELTA test site area is inactive.
- The SERVICE area is primarily an administrative, engineering and maintenance area that supports the test stands and is in good condition.
- The AREA 1 area used to contain the LOX plant and is inactive.
- The SKYLINE area contains water tanks in good condition that support the tests.

2. Other Comments of Interest:

There are many buildings that are inactive and locked, restricting access. Because of the rock and desert environment, these buildings attract rattlesnakes and promote the Hanta Virus. For safety purposes, consideration should be given to not opening these buildings for future inspections.

Logistics Information

1. General Information (*On the Site*):

The site is a large rock and desert area approximately 50 miles northwest of Los Angeles Airport. It is situated on the top of a mountain which provides an excellent overlooking view of Simi Valley, Pasadena, and Los Angeles when the skies are clear.

2. Directions to the Site:

From the Los Angeles Airport, exit the airport following signs for Sepulveda Blvd (Hwy 1). Go two miles, turning left onto Centinela Avenue. Go straight to go onto Mesmer Avenue. Turn right onto Jefferson Blvd. Take Interstate 405 North/San Diego Freeway North. Go 20 miles to Highway 118 West. Exit onto

Topanga Canyon Road. Go approximately four miles and take a right onto Plummer. Go approximately four miles, and take a right onto Woosley Canyon Road which is a very steep, winding road that goes up to the SSFL.

3. Concept of Operations:

It will take approximately three days to perform the assessment. The closest place to find lodging is the Simi Valley area.

4. Actual Man-Hours Required to assess the Site:

It is estimated that the actual man-hours required to review the facilities amounted to 60 hours.

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STENNIS SPACE CENTER

Stennis Space Center, Mississippi
6/23/03 – 6/25/03

Plexus Scientific Team Members:
(Subcontract to Nelson Engineering Co.)
Carrie Seringer (site lead)
Bob Rauch
Mario Peralta

Center POC:
Mr. Robert Heitzmann
NASA
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(228) 688-3011

Site RPI Manager:
Ms. Larrie Kelly

Contractor:
Mississippi Space Services (MSS) serves as NASA's base operations services contractor, providing facilities and maintenance support to NASA and the resident agencies at SSC. Attachment 1 contains the key site representatives that assisted the deferred maintenance assessment team.



Figure 29. Building #4120

Summary of Site Visit

1. Visit Summary:

The Stennis Space Center (SSC) DM visit took place between Monday, June 23 through Wednesday June 25, 2003. There were 241 items in the RPI database that were reviewed and/or validated. Of these:

- Four (4) facilities were repeated in the database.
- Four (4) facilities are currently under construction.
- Nineteen (19) facilities have been abandoned.
- Four (4) trailers have been removed from the site.
- Six (6) facilities have been demolished.

The site Real Property files are accurate and continued reconciliation with NASA Headquarters records is recommended.

Coordination for the MAF site visit was performed by Mr. Robert Heitzmann of NASA, SSC. Mr. Heitzmann provided a site introduction briefing at the kick-off meeting. The DM assessment was lead by Ms. Carrie Seringer of Nelson Engineering Co. as a subcontractor to Plexus Scientific. The DM assessment team was provided excellent support from the Mississippi Space Services staff at the

site. Assessment personnel were accompanied by Mr. Luke Scianna, Mr. Roger Williams, and Mr. Ryan Seals for all facility reviews. Review and resolution of RPI issues was performed by DM team members with Ms. Larrie Kelly, who was extremely helpful.

The visit began with an introduction on the morning of June 23rd. The field assessments were completed on June 23rd through June 25th. An out-brief was provided to Mr. Heitzmann and Mr. Miguel Rodriguez of NASA and MSS contractor personnel on June 25th.

SSC is the program manager for NASA's rocket propulsion test activities and Earth science applications within NASA's Earth Science Enterprise (ESE). SSC also tests and flight certifies rocket propulsion systems for current and future space vehicles and provides test services for government and commercial customers. Overall, the site is in good condition. A significant amount of the site's total CRV is contained in the Test Stands. These Test Stands suffer significant corrosion due to the environment and testing operations, and require continuous maintenance efforts. The MSS staff has a good understanding of their facilities, a good overall maintenance program and proper plans and projects in place to replace/repair various items based on funding availability.

2. Other Comments of Interest:

General improvement in the site's overall condition from 2002 could be seen, with new roofs and corrosion control efforts at the test stands evident.

Logistics Information

1. General Information:

The site is located in the southwest corner of Mississippi about 45 miles northeast of New Orleans, Louisiana and 30 miles from the Mississippi Gulf Coast. All SSC facilities are located directly within the fenced SSC compound and there are no remote facilities that need to be accessed from other areas.

2. Directions to the Site:

The site is accessed by Interstate 10 in Mississippi at Exit 2 approximately 48 miles west of Biloxi and 45 miles east of New Orleans. From Exit 2, turn north at the intersection onto Highway 607. SSC is located approximately two miles north of I-10 on Highway 607.

3. Concept of Operations:

The assessment team lead assigned assessment personnel a group of facilities, primarily based on geographic location, to be reviewed and assessed. MSS personnel accompanied DM team members to all facilities to provide maintenance history and access to facility spaces. Facility managers or key facility occupants were contacted in most facilities. At the completion of each day, the assessment team coordinated the day's accomplishments and the team lead made assignments for the following day.

4. Actual Man-Hours Required to assess the Site:
It is estimated that the actual man-hours required to walk down and review the facilities amounted to 80 hours.