CASE STUDY

BPM AT WORK:
IMPROVING PROPERTY MANAGEMENT PROCESSES
AT A LARGE R & D FACILITY

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NASA – Goddard Space Flight Center
Greenbelt, Maryland
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OUTLINE

- Background
- Property Management Baseline
- Case Study Problem Statement
- Issues and Root Cause Analysis
- Corrective Actions
- Process Improvement Outcomes
- Remaining Process & Open Issues & Final Challenges
- Discussion -- Lessons Learned from this BPM Task
Mission:
Develops, implements, and directs comprehensive flight project and institutional logistics and administrative services programs to support the management and operations of the Goddard Space Flight Center (Greenbelt and Wallops) and NASA Headquarters. NASA Lead Center for Agency Travel Services and Mail Management.

Vision:
To be each customer’s “provider of choice” for delivering the highest possible quality in logistics services. Through teamwork and innovation, we will continually empower our professional workforce to meet the evolving challenges of our mission while creating a workplace environment which fosters continuous improvement, integrity and unparalleled customer service.
Logistics Management Division

- GSFC, Wallops Island Facility and NASA Headquarters
- 4 Branches, 47 civil servants, 210 contractor personnel
- Contractors:
  - Trax International Corporation - Logistics & Administrative Services
  - Cube/EG&G - Wallops Island Logistics Services
  - CI Travel - Agency-wide Travel Services
- Customers: 12,000 Civil Service & Contractor personnel
- Flight project support operations are ISO 9001 certified - Processes are comprehensively documented in Work Instructions
- Institutional support services - Processes are fully documented in Standard Operating Procedures (SOPs)
Hub & Spoke Concept of Operations

**Services at the Hub**

**Supply**
- JIT Office Supplies Program
- Stores Stock Requisition Processing and Purchasing
- Project Parts Purchasing and Warehousing

**Property Management**
- Sales Program Management
- Stevenson-Wydler Program
- Foreign Disposals

**Transportation**
- Traffic Management - Carrier Routing/Rating
- Household Goods Moves

**Services at the Spoke**

**Customer Service Interface**

**Supply**
- Receiving and Warehousing
- Inventory Management

**Property Management**
- Equipment Management
- Reutilization Program
- Warehousing

**Transportation**
- Fleet Management
- On-site Pickup and Delivery
Institutional Support Services

- Center Mail Services
- Records and Directives Management
- Motor Pool and Fleet Motor Vehicle Maintenance & Operations
- Transportation & Pickup Delivery Services
- Center Taxi and shuttle bus services
- Office supplies – JIT Next Day Delivery
- Office Moves - Furniture and Carpet – Interior Design Program
- Property Accountability, Reutilization, Disposal & Public Sales
- Central Receiving & Packing – Crating – Shipping Services
- Supplies & Materials Purchasing and Warehousing
- Export Control Program
- Center Travel Services
Flight Projects Logistics
Parts Acquisition and Warehousing

Complete acquisition support (purchasing, storage, issue, delivery) is provided for flight parts during all phases (brassboard, engineering, or flight models) of development and construction of in-house GSFC instruments and spacecraft.

- ESD certified parts facility with temperature and humidity controls
- Lowest prices due to volume purchasing
- Bulk flight hardware and qualified suppliers
- Documentation library for traceability of parts
- Residual Parts Program - $18 million of parts in stock available for FREE!
Transportation and instrumentation services are provided to select the optimum transportation approach and to document the environment experienced during transportation. Support for emergencies and specialized/unusual requirements is available.

- Development of Transportation Plans
- Transportability Engineering
- Spacecraft Transporter System (transporter, isolation system, and ECS) design, fabrication, and modification
- Hardware instrumentation for shock, vibration, and temperature
Property Management Baseline

- 60,000 items costing $525 million - technical and administrative equipment used for mission operations and support work
- Logistics Division and Trax contractor provide tracking control processes through property’s entire life cycle using the NASA Equipment Management System (NEMS) and the NASA Property Disposal Management System (NPDMS)
- All property meeting “controlled” criteria is barcode tagged: Purchased, fabricated, transferred, loaned, shipped and excessed - disposed
- 450 capitalized equipment items costing over $100 thousand have additional tracking controls
- Cyclical physical inventories are conducted by Trax inventory teams
- Changes to assigned equipment users or equipment status or location must be updated into NEMS
- 20,000 items annually are processed for reutilization transfers, public sales or school donations
- NEMS and NPDMS legacy mainframe-based systems are labor-intensive
Case Study Problem Statement

- Prior to 2003 the Logistics Division’s (Trax) internal processes were not achieving established Equipment management performance metrics nor meeting the Logistics Division’s “world class” customer service expectations

- Performance Metrics: Desired Quality Level ---- 96%
  Acceptable Quality Level ---- 93%

  - PRS82 (SOW 6.1.2) – NEMS Data Entry Timeliness: Overall Rating = 78.3%
  - PRS83 (SOW 6.1.2) – Accuracy & Integrity of the NEMS Database: Overall Rating = 78.7%
  - PRS87 (SOW 6.2.1) – Labeling of Excess Property: Overall Rating = 75.8%
  - PRS88 (SOW 6.2.1) – Excess Warehouse Processing: Overall Rating = 86.7%
  - PRS90 (SOW 6.2.1) – NPDMS Data Entry Timeliness & Accuracy: Overall Rating = 85.1%
Root Cause Analysis

- July 2003 Trax completed initial analysis of overall internal equipment management operations:
  - Observations:
    - Workflow, capital assets, data input accuracy, discrepancy research and incomplete documentation, tagging-in-division, and inventory reconciliations
    - Standard Operating Procedures (SOPs) are out of date and no longer useful
    - Some Performance Metrics are out of date
    - Workload and manpower resources are out of balance
    - NEMS support organization needs realignment and personnel need training
  - Recommendations: Process change controls, quality and workflow controls, update SOPs, modify performance metrics and change the NEMS support organization and train personnel in updated processes.
Corrective Actions

- August 2003 Logistics Division established joint Property Process Review Team to conduct further analysis, develop revised process flows, update SOPs and to conduct training of property personnel.
- Team reviewed and validated compliance with Agency, Center and Division equipment management and property disposal policies and procedures
- Conduct detailed reviews of all 25 processes and related workflows
- Develop Visio drawings in “real-time” by bringing specific workers into the team review sessions
- Institute “real-time” training with employees during sessions
- Propose revised performance metrics for management’s approval
- Update Equipment Management and Property Disposal SOPs
- Conduct follow on training with NASA and Trax property staff
- Share improvements with Center’s customers and 300 property custodians
Property Case Study Analysis

NEMS Overview Flow Chart

File name: Library\Studies\NEMS\NEMS Flow Charts.xsd

18 July 2001
30 August 2002
18 June 2003

- ADD Receiving/Transfer
- ADD Cancelled or Realigned
- ADD Change Type
- CHANGE Maintain NEMS
- CHANGE Loan Program
- DELETE Survey

NEMS Supervisor
1. QC documentation
2. Time stamp
3. Note transaction type

Capitalized Equipment
1. Details shown on separate sheet
2. QC cost?
3. No?

Capitalized Equipment
1. Details shown on separate sheet
2. QC cost?
3. No?

NEMS Data Entry
1. Show on separate sheet
2. Code 2319 microfiche & file source documents weekly
3. PRS82 timeliness
4. PRS83: data integrity
5. Disposal

ECNs from 1638s to NEMS history

NEMS - NPDMS

Disposed transactions (DELETE) processed in Excel
16

Property Case Study Analysis

[Diagram of NEMS (20-4) Pre-Shipment Flow Chart]

Filename: Library\Studies\NEMS\NEMS Shipping Flow Chart.vsd

20-4 received in NEMS control from Packing & Crating, SPO, Traffic Management Export Control, Hand Carries, Code 235 for review

Research ECN Fax 20-4 to Property Custodian or originator to obtain required signatures

Looks like it might involve shipping equipment

Release 20-4 to Packing & Crating/ SPO/ Export Control/ Traffic Management for shipment

No

Yes

20-4 Block 14 indicates equipment?

No

ECN recorded in 20-4 Block 17?

Yes

Yes

Contact Property Custodian inquire as to why equipment not tagged. (See Note 1)

No

Controlled equipment?

No

Yes

Decontrolled?

Signatures in 20-4 Approval Block OK?

No

Pull Tag apply NF1517 Update 20-4 and release for shipping

Reason & authority 20-4 Blocks 5 & 6 OK?

No

Obtain correct signatures & document authority. May involve IPO

Originator obtain "Director of" approval

Yes

No

Need more signatures?

No

Yes

Contact originator for corrections, return if no response within 3 days

No

Going to a Contractor or Project?, Blk 6A or 6B

Neither

No

Yes

CO signed, Approvals Send to IPO for review

Contract

Project

No

Yes

Yes

No

Emergency?

Yes

No

Contact originator for corrections, return if no response within 3 days

No

NEMS keep suspense copy of 20-4 & follow up as necessary

This is the Shipper In-Box

Log In Shipper

Return documents & equipment to originator

Loan? (5D & 6C)

Yes

No

Yes

Return documents & equipment to originator

No

Yes

IPO keep suspense copy & follow up as necessary

This is the Shipment

Notify Code 235 if shipped without approval

Action 1 - Connie Create 20-4 rejection procedure

Notify Code 235 if shipped without approval

Action 2 - William Create checklist for researching Shipper

Action 3 - Donna Create new Shipper & test for functionality

Action 4 - Donna include block number for Approvals, make block 5 & block 6 mandatory to be completed

Action 5 - Dave M. Camera for Will

Action 6 - Connie H. Internal Pre-meeting by (8/12/04) Set up meeting with project - Logistics team regarding identification of Project on shipper-scheduled by (8/21/04)

Action 7 - William/ Donna Flesh out checklist

Action 8 - Donna Document requirements forward to Mike Taylor & copy team

Team Reminder Discuss if we want to account for unrecorded equipment leaving for repair with Sara

Action 9 - William Bring old copies of shippers

Action 10 - Dave M Inform supply to notify NEMS when tagged equipment received

Action 11 - Donna Percent of shippers "Project Related"

Action 12 - Connie Check other center procedures for Project related shippers
Property Case Study Analysis
Property Case Study Analysis

Capital Equipment Monthly, Quarterly And Semi-Annual Reconciliation with Accounting

- Monthly Reconciliation
  - Receive Monthly Report from Code 150
  - Reconcile with Code 150 monthly

- Reconcile PO's in General Ledger
- Differences are reconciled monthly

- Quarterly Reconciliation
  - MSFC provides a copy to SESO for information
  - SESO signs letter to Code 150
  - MSFC provides a copy to SESO for information

- Semi-Annual Reconciliation
  - Code 235 receives semi-annual letter from Code 150 for SESO's signature
  - SESO signs letter to Code 150

- Letter returned to Code 150

- Status Quo
  - Research and transactions of necessity
  - Letter sent to Code 150

Research and transactions of necessity
Property Case Study Analysis

Equipment Process Improvement Outcomes

- **Timeliness**  Document Flow – streamlined, eliminated unnecessary steps, established tracking for high risk items and set up follow-up procedures for returned documents, preparing loadsheets directly into CHIRPS

- **Integrity**  Established QC steps for data entry and NEMS integrity, preparing loadsheets directly into CHIRPS with drop down boxes, created a new NEMS report (ITEMFSC Report) comparing item names, federal supply classes and capital sensitive codes, weekly query of database

- **Inventory**  Pre-inventory briefing and pre-inventory reports, conduct inventory in first month of quarter then reconcile in the remaining two months

- **Capital Asset Process**  Reviewed procedures for tracking of documentation for transactions, updating logs, reconciliation with Financial Management and the annual inventory process

- **External Loans**  Established new loan log, reviewed proper documentation with Headquarters and legal, reviewed annual verification and extension of loan
NEMS Process Improvement continues to develop performance enhancing process changes - Down to the last few areas to consider - Upward trend in all metrics is evidence of team effectiveness.

Introduced Pre-Inventory briefing, Report 272 (Items Not Scanned) and Letter of Intent to improve efficiency of Center inventories.

NASA HQ Inventory – Dedicated property administrator assigned, all accounts scanned as part of process to transfer HQ equipment to the property administrator’s accountability.

CHIRPS – New load sheet working well, positive impact on NEMS database accuracy

Long term quality initiatives have resulted in the fusion of all quality data “on line”

NEMS and Disposal Process Review teams using this new capability

Result is true continuous improvement that features “on line” participation of both managers and working level staff combined with immediate implementation of process change

Rolling updates of SOPs & metrics guarantee that results will be captured and institutionalized
## Property Case Study Analysis

<table>
<thead>
<tr>
<th>PRS</th>
<th>Title</th>
<th>Performance Standard, DQL/AQL</th>
<th>6-mo Average</th>
<th>12-mo Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>Eqpt Control Activities</td>
<td>P&amp;C activities performed IAW applicable WIs and procedures, 98%/90%</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>79</td>
<td>Tagging In Division</td>
<td>Tagged within 4 days of receipt of documentation or phone call 96%/93%</td>
<td>99%</td>
<td>99+%</td>
</tr>
<tr>
<td>80</td>
<td>Loan Lease Program</td>
<td></td>
<td>Metric Discontinued Mar 04</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Loan Renewals</td>
<td></td>
<td>Metric Discontinued Mar 04</td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Capital Equipment</td>
<td>Capital eqpt NEMS adds within 4 days, other transactions within 30 days 100%/98%</td>
<td>New%</td>
<td>N/A%</td>
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<tr>
<td>82</td>
<td>NEMS Data Timeliness</td>
<td>NEMS data entry within 4 days of receipt of source document, 96%/93%</td>
<td>97%</td>
<td>96%</td>
</tr>
<tr>
<td>83</td>
<td>NEMS Data Base Integrity</td>
<td>Info in NEMS database matches source document, 96%/93%</td>
<td>96%</td>
<td>94%</td>
</tr>
<tr>
<td>84</td>
<td>NIPMIS Data Entry</td>
<td>Metric Discontinued Jan 02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>Equipment Inventories</td>
<td>Inventories conducted IAW NPG4200.1 and the government-approved schedule. Scanning and Summary Letter completed &amp; forwarded to SEMO within 30 calendar days from time the account is opened. NEMS771 Report reconciled as each inventory account is closed, 95%/93%</td>
<td>93%</td>
<td>Not enough data</td>
</tr>
</tbody>
</table>
Remaining Process & Open Issues
Equipment Management

- Employee’s borrowing government equipment (in review now)
- Tagging in Division
- Industrial Property Contracts
- Shipper Validation
- NEMS System Issues
- Customer Service Actions
- Un-measurable Work Load
Property Disposal Process Improvement Outcomes

- **Data Entry Accuracy and Timeliness**  Eliminate extra steps, split into two metric, timeliness metric will be 100% of data instead of a sample, can use email or fax instead of original 1602 or 20-9

- **Labeling**  Implemented new process for labeling equipment at Headquarters

- **Hard Drive Cleaning**  Bad hard drives are being sent to code 452 to be degaussed (temporary)

- **DHS process**  Implemented new process, hired a warehouseman. Met with DHS on problems with receiving incorrect documentation, established spreadsheet for workload volume.

- **Donations (captured so far, review continuing)**  Agreed to get more active………put information about the program and forms on Web site

- **Warehousing (captured so far, review continuing)**  Reviewed – the overall flow of equipment and furniture in the warehouse, equipment and furniture into and out of the warehouse, the APICS system and process, the receipt of the equipment into the warehouse and hazardous material & waste
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<tr>
<td>86</td>
<td>Excess Program Activities</td>
<td>P&amp;C activities performed IAW applicable WIs and procedures, 98%/90%</td>
<td>No Data</td>
<td>No Data</td>
</tr>
<tr>
<td>87</td>
<td>Labeling Excess Property</td>
<td>Labels affixed prior pickup &amp; within 3 workdays from receipt of NF1638, 96%/93%</td>
<td>100%</td>
<td>91%</td>
</tr>
<tr>
<td>88</td>
<td>Excess Warehousing</td>
<td>Material entering the Excess Warehouse inspected &amp; assigned location within 3 workdays of receipt, 96%/93%</td>
<td>100%</td>
<td>95%</td>
</tr>
<tr>
<td>89</td>
<td>Hard Drive Cleaning</td>
<td>Hard drives processed by clearing all data and software, installing operating system, 95%/90%</td>
<td>100%</td>
<td>100%</td>
</tr>
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</thead>
<tbody>
<tr>
<td>90A</td>
<td>NPDMS Accuracy</td>
<td>NPDMS completed within 4 workdays from receipt of source document. The data on the source document must match data keyed, 96%/93%</td>
<td></td>
<td>99%</td>
<td>88% (est.)</td>
</tr>
<tr>
<td>90B</td>
<td>NPDMS Timeliness</td>
<td>Labels affixed prior pickup &amp; within 3 workdays from receipt of NF1638, 96%/93%</td>
<td></td>
<td>98%</td>
<td>88% (est.)</td>
</tr>
<tr>
<td>91</td>
<td>Excess Reutilization</td>
<td>Metric Discontinued Feb 03 when budget cuts resulted in contract change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>Excess Property Donation</td>
<td>An on-going inventory log of equipment donated to schools is maintained, 100%/98%</td>
<td></td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>93</td>
<td>On-Site Sales</td>
<td>Property prepared for on-site sales inspection to public sector w/in 20 workdays of Property List provided by the Sales Contracting Officer, 100%/98%</td>
<td></td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Remaining Process & Open Issues
Property Disposal

- Warehousing (in review now)
  - Hazardous waste
  - Relocation of warehouse racking with like items co-located
- Donations to Schools processes (in review now)
  - Grants
- Transfers
- Sales
- Timeliness of Disposal
- Customer service actions
Property Case Study Analysis

Final Challenges

- Maintain the momentum of the Equipment and Disposal Process Improvement Teams to complete the tasks – Ongoing for 12 months!

- Institutionalize overall outstanding progress, successes and outcomes

- Conduct customer service training and continue to foster “world class” customer service culture throughout the workforce
Property Case Study Analysis

Discussion

Lessons Learned from this BPM Task