BERKELEY LAB
LAWRENCE BERKELEY NATIONAL LABORATORY

U.S. DEPARTMENT OF ENERGY

LBNL Facilities Division

Optimizing Activity-level Work Planning and Control

Lessons Learned

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FCOG

Topics

- Initiative Background
- Work Planning & Control Implementation for Maintenance
- Lessons Learned

Initiative Background

Drivers

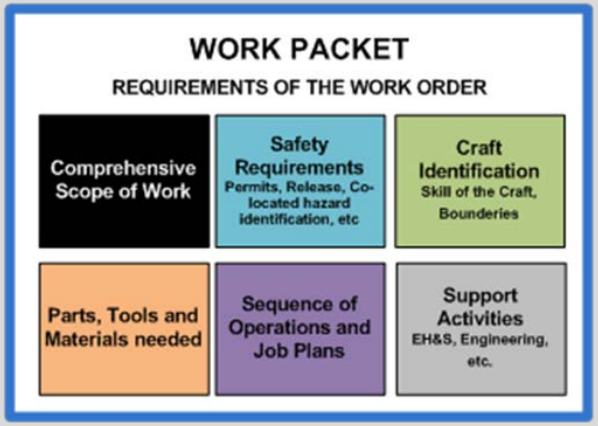
- Unsatisfactory results of HSS 2009 review of LBNL's ISM
- LBNL's JHA (Job Hazard Analysis) process did not meet DOE requirements
- 2010 HSS assist visit on Electrical Safety
  - Our Facilities process did not ensure that all activity-level hazards were adequately identified, analyzed, or controlled
  - HSS team recommended using EFCOG guidelines to develop Work Planning and Control (WPC) program for **Maintenance**
- Increase workplace performance

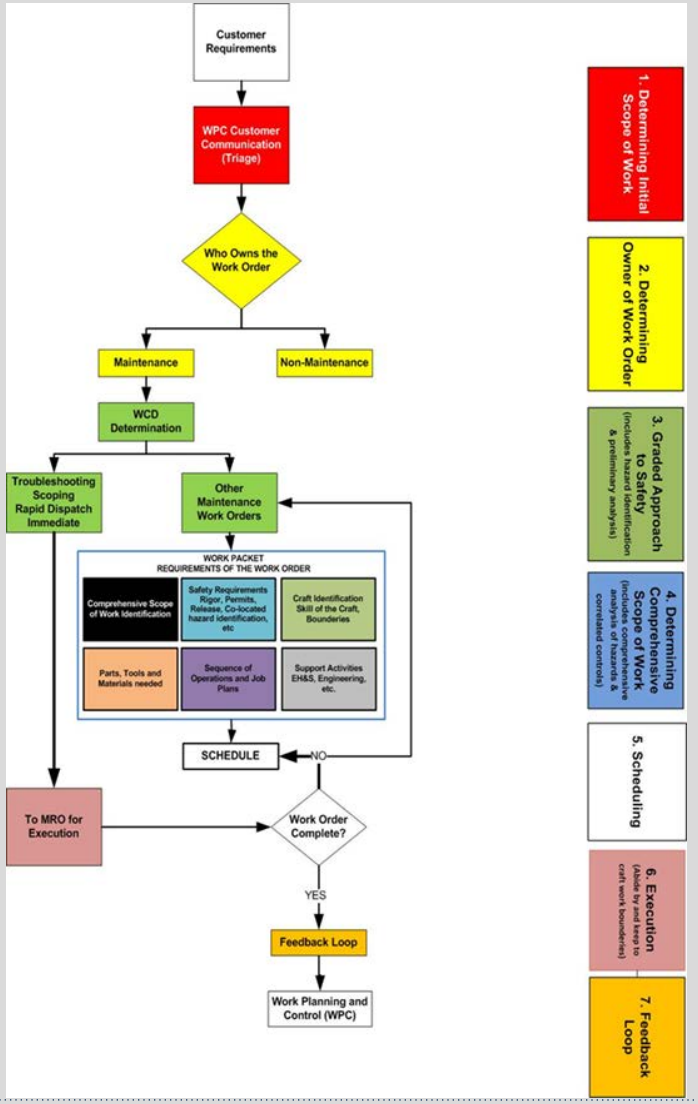
Work Planning & Control Implementation

Work Planning & Control process is in line with DOE requirements pertaining to ISM core functions and guiding principles

7 Key Process Steps

Work Planning & Control team interacts with Maintenance and Plant Engineering as part of the Planning Process

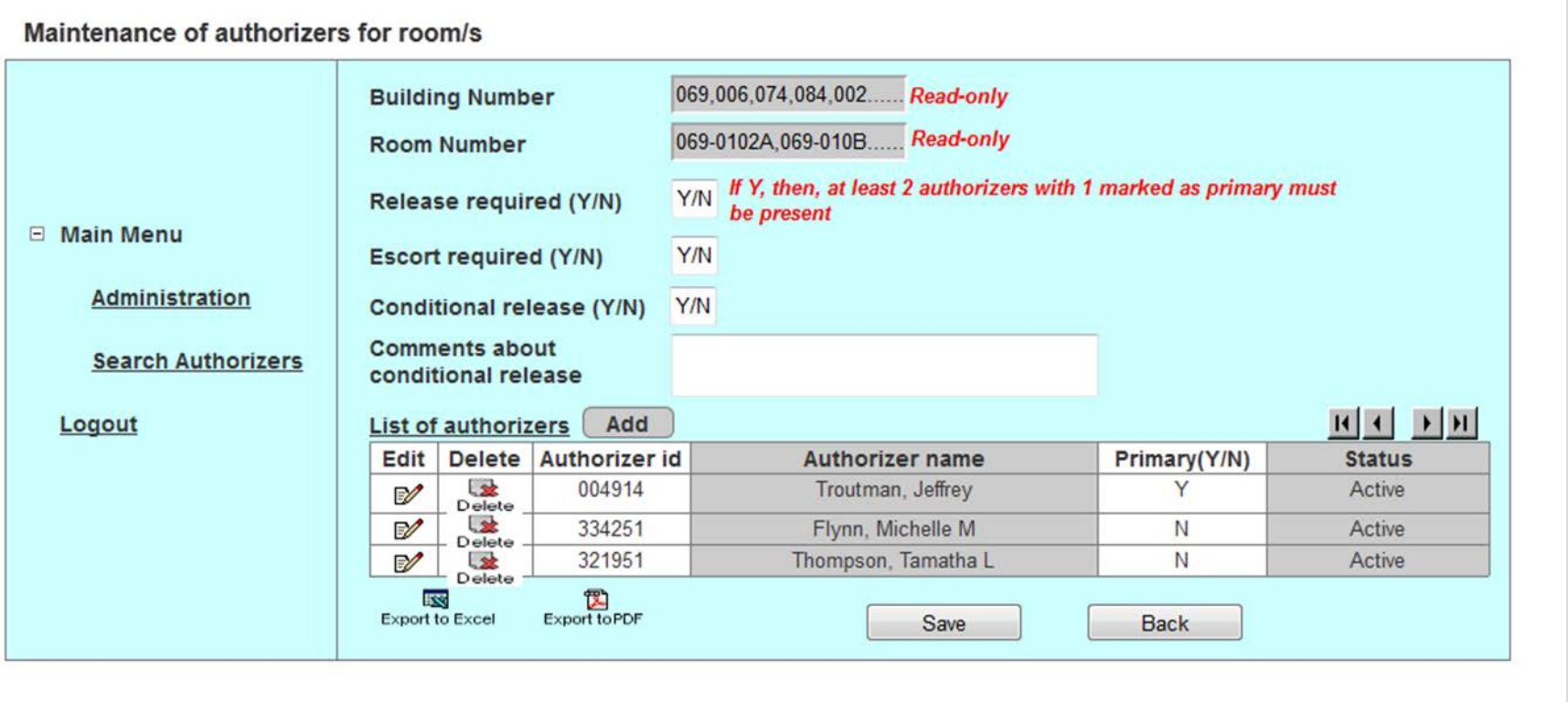




Work Planning & Control Implementation

Work Release Scheduling

- **Web application**
- **Maintained by each division**
- **Automated Work Order, work flow process**



Lessons Learned

Communicating Roll-out

- Lack of engagements with craft workers during development
  - Impacted understanding and buy-in impacted
  - WPC viewed as an added layer- slowing down work

- Safety benefits not recognized
  - Not emphasized during roll out
  - Outputs (work orders, etc.) don't leverage ISM

- How does it help the worker ? (WIIFM)
  - "What value is WPC providing if leads still do everything?"

Lessons Learned

Defining Skill of the Craft

- Not well defined for each craft, so work orders:
  - More detailed than necessary
  - Redundant
  - Include routine hazards

- Better and clearer definition will:
  - Eliminate redundancy
  - Remove routine hazards
  - Emphasize significant and non-routine hazards

Lessons Learned

Planning Craft Work

- WPC Organizational Maturity
  - Hiring personnel from crafts
  - Continuous process improvement as the department advances
- Interfacing with other Facilities departments and other divisions to assure compliance with requirements
- Standardizing processes
- Identifying constraints

Lessons Learned

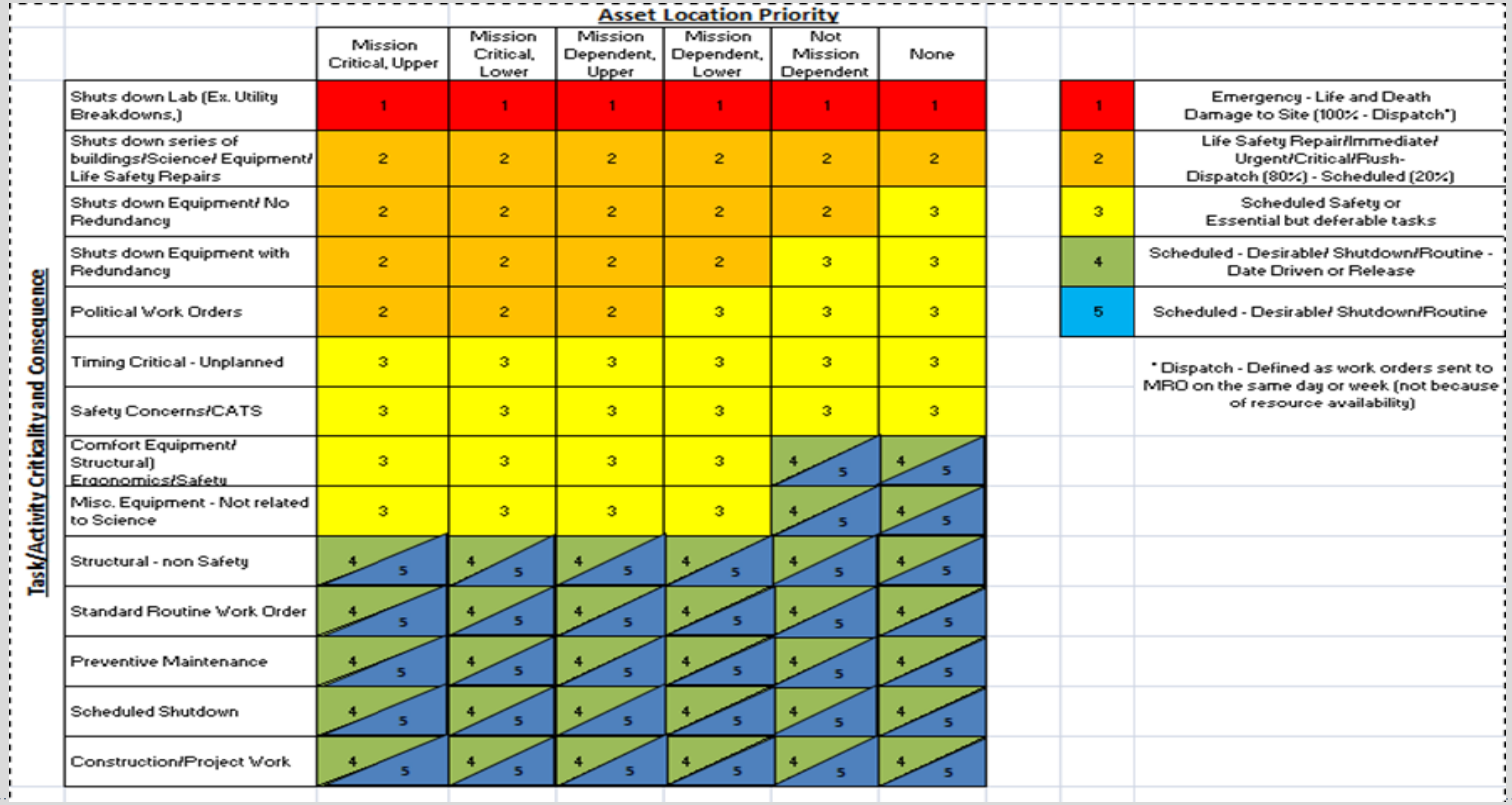
Scheduling Craft Work

- WPC seen as just schedulers, not planners
- Excel spreadsheets used to document schedules
- Current schedules have one week horizon
  - Manually reschedule incomplete jobs
- Tactical rather than strategic
  - Coordinating crafts is cumbersome
  - Work duration and resource loading are guesstimates

Lessons Learned

Prioritization Scheme

- Consider task/ consequence, asset/ location, backlog
- Simplify- qualitative better than quantitative



Asset Location Priority

Task/Activity Criticality and Consequence	Mission Critical, Upper	Mission Critical, Lower	Mission Dependent, Upper	Mission Dependent, Lower	Not Mission Dependent	None
Shuts down Lab (Ex. Utility Breakdowns,)	1	1	1	1	1	1
Shuts down series of buildings/Science/ Equipment/ Life Safety Repairs	2	2	2	2	2	2
Shuts down Equipment/ No Redundancy	2	2	2	2	2	3
Shuts down Equipment with Redundancy	2	2	2	2	3	3
Political Work Orders	2	2	2	3	3	3
Timing Critical - Unplanned	3	3	3	3	3	3
Safety Concerns/CATS	3	3	3	3	3	3
Comfort Equipment/ Structural) Ergonomics/Safety	3	3	3	3	4 5	4 5
Misc. Equipment - Not related to Science	3	3	3	3	4 5	4 5
Structural - non Safety	4 5	4 5	4 5	4 5	4 5	4 5
Standard Routine Work Order	4 5	4 5	4 5	4 5	4 5	4 5
Preventive Maintenance	4 5	4 5	4 5	4 5	4 5	4 5
Scheduled Shutdown	4 5	4 5	4 5	4 5	4 5	4 5
Construction/Project Work	4 5	4 5	4 5	4 5	4 5	4 5

1	Emergency - Life and Death Damage to Site (100% - Dispatch*)
2	Life Safety Repair/Immediate/ Urgent/Critical/Rush- Dispatch (80%) - Scheduled (20%)
3	Scheduled Safety or Essential but deferable tasks
4	Scheduled - Desirable/ Shutdown/Routine - Date Driven or Release
5	Scheduled - Desirable/ Shutdown/Routine

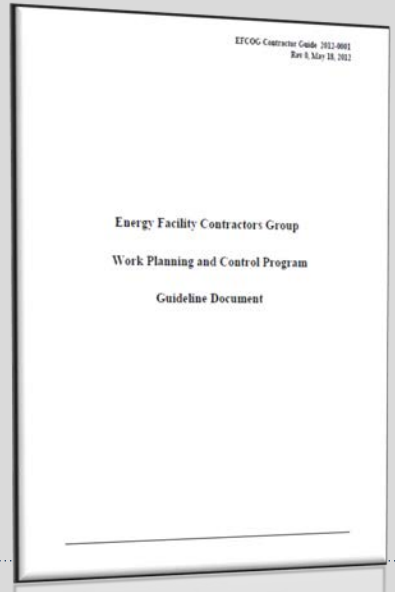
* Dispatch - Defined as work orders sent to MRO on the same day or week (not because of resource availability)

Lessons Learned

EFCOG Guidelines are Compatible with APICS Standards and Methodology

APICS The Association for Operations Management, is a not-for-profit international education organization, offering opportunities to increase workplace performance.

APICS focuses on the effective planning, scheduling, use and control of service organization.



EFCOG Guidelines

- Planning and Scheduling Methodology
- Scope of Work Methodology
- Prioritizing Methodology
- Job Plans – Work Packets
- Feedback
- Metrics

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