

# Operations

- Good
  - Telescope downtime is low
  - Important repairs accomplished
  - Observer satisfaction is high
- Bad
  - Maintenance is deferred
  - Unfinished work list is growing
  - Staff is overworked

# Service levels

- Low
  - Little or no observer support
  - Shutdown on failures
- Medium
  - Moderate observer support
  - Nighttime support
- High
  - Hands-off “observing”

# Magellan is medium service

- Afternoon instrument & telescope check
- Startup assistance if needed
- Telescope operator
- Nighttime repairs
- On-site instrument support

# Medium is the best option

- Infrequent observers can be efficient
- Few nights lost to hardware failures
- Good observing experience

# Magellan capabilities

- Two telescopes
- Seven facility instruments
  - IMACS, MIKE, MIKE Fibers, LDSS, B&C, MagIC, PANIC
- No extended (month-long) shutdowns
- Good observer support

# Definitions

- Current staffing
  - Existing staff today (9/04)
- Required staffing is that needed for
  - Medium support
  - Existing instrument suite (7 instruments)

# Support every day

- Positions require three FTE for full coverage
  - Vacations
  - Illness
  - Work travel
- Not all positions require full coverage

# Required staffing (medium)

- Observer support
  - Telescope operators (full coverage)
  - Instrument scientists
  - Instrument specialists

# Required support (medium)

- Infrastructure support
  - Telescope engineers
  - Electronics technician (full coverage)
  - Programmers
  - Mechanical technicians
  - Mechanical assistants
  - Computer administration & networking
  - Site management

# Required support (medium)

- Off-site support
  - Scheduling
  - Engineering (mechanical, electronics)
  - Purchasing, logistics, shipping
  - Management

# Telescope operator

- Safe telescope operation
- Minor troubleshooting
- Have six; need six
  - Two telescopes, full coverage

# Instrument scientist

- Monitors instrument performance
- Assists astronomers with setups
- Interface with instrument builders
- Maintains documentation
- Observing software development
- Have one; need two
  - One for every three instruments (we have 7)
- Shortage covered by OCIW scientists

# Instrument specialist

- Afternoon instrument setup
- Instrument changes, troubleshooting
- Have two; need four
  - One per telescope per day
  - Cover unexpected problems
  - Vacation, travel, and illness coverage
- Shortage covered by electronics techs

# Telescope engineer

- Maintains telescope performance
- Leads maintenance & repair
- Designs infrastructure modifications
- Have 0.6; need 1.6 to:
  - Distribute knowledge
  - Cover vacation, travel, & illness
- Shortage not covered; work stalled

# Electronics technician

- Design & build new subsystems
- Telescope and instrument repairs
- Have three, need three
- Current techs cover inst specialist duties
- Shortage covered by small telescope crew

# Programmers

- Control systems
- Operator software
- Have 2.9; need three

# Mechanical technician

- Major mechanical work
- Machining, welding, assembly
- Have two; need two

# Mechanical assistant

- Assist in miscellaneous tasks
- Telescope cleaning
- Have two; need two

# Computer & networking

- Network maintenance
- Computer administration
- Science & staff computer maintenance
- Web programming
- Server maintenance
- Need 0.5 (share); have 0.1
- Shortage covered by programmer; work slowed

# Site manager

- Technical staff lead
- Hiring
- Work schedules
- Have 0.25; need 0.25

# Staffing: current vs. required

| Title                 | Current | Req'd | Under |
|-----------------------|---------|-------|-------|
| Site manager          | 0.25    | 0.25  | 0.00  |
| Telescope engineer    | 1.60    | 1.60  | 0.00  |
| Instrument scientist  | 1.00    | 2.50  | 1.50  |
| Instrument specialist | 2.00    | 4.00  | 2.00  |

# Staffing: current vs. required

| Title                  | Current | Req'd | Under |
|------------------------|---------|-------|-------|
| Telescope operator     | 6.00    | 6.00  | 0.00  |
| Electronics technician | 3.00    | 3.00  | 0.00  |
| Programmer             | 2.90    | 3.00  | 0.10  |
| Mechanical technician  | 2.00    | 2.00  | 0.00  |

# Staffing: current vs. required

| Title                | Current | Req'd | Under |
|----------------------|---------|-------|-------|
| Mechanical assistant | 2.00    | 2.00  | 0.00  |
| Computer admin       | 0.10    | 0.50  | 0.40  |

# Staffing: current vs. required

- No overstaffed positions
- Understaffed:
  - One instrument scientist
  - Two instrument specialists
  - $\frac{1}{2}$  computer administrator
- Some shortages covered by purchasing service from small telescopes or OCIW

# Understaffing consequences

- Non-critical problems are ignored
- Preventive maintenance reduced
- Finish work not proceeding
- Staff dissatisfaction with excessive work
- Staff absences have high impact
- Staff burnout and resignations are a worry

# A run report comment

*Technical Support: Good as always. I did notice more than ever that the staff is overworked. There were major problems at the Clay and if I had required more attention (e.g. a new observer), there would have been no way the staff could handle both telescopes simultaneously.*

# Priorities

- Computer administrator
  - Propose sharing with GMT (25%) and small telescopes (25%)
  - This hire buys back programmer time
- Instrument specialist (first)
- Instrument scientist
- Instrument specialist (second)
- Proposed budget includes these positions

# That's for current operations

These staff increases are needed to operate today's Magellan observatory.

More instruments require additional staffing.

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