



Environment, Health,
& Safety Manual

2017 Annual Report

THE STEWARD OBSERVATORY

ANNUAL SAFETY REPORT

2017





Environment, Health,
& Safety Manual

2017 Annual Report

The Steward Observatory Safety Management System has been an operational organization for eleven (11) years. Monitoring accident statistics since 2006 shows an overall reduction in injuries and lost work days. The year 2017 had four (4) OSHA recordable accidents and eighteen (18) work days lost due to injuries or accidents. This is an increase from 2013-2016 rates which had three (3) OSHA recordable accidents and zero (0) lost days. The 2017 accident statistics demonstrate that Steward Observatory must do better if we are to reach our goal of zero (0) accidents and lost work days.

The safety theme for 2017 was to have all employees use the Steward Observatory On-Line Training (SOOT) website, developed by Dallan Porter and Cory Knop, both with the Multiple Mirror Telescope Observatory (MMTO). The SOOT website was widely advertised to work groups within Steward Observatory and the Large Binocular Telescope Observatory (LBTO). SOOT offered a variety of safety training topics and record keeping for both classroom and online training. A major campaign was initiated to get all the employee names, their departments, and training records into the system, while developing employee awareness and participation in the program. The goal for 2018 is to develop better SOOT website reporting tools, that enable managers to have more visibility to their employees training records.

In January there were several departments that showed zero participation in the SOOT website training, even though they had completed other types of training. By the end of 2017, the SOOT website showed a comprehensive user list of all non-academic departments and a correct percentage of completed training for department employees. This effort will continue throughout 2018 with the expectation that the program will be expanded to include faculty and students.

In addition, Jeff Kingsley, Associate Director of Steward Observatory, revised the Personnel Evaluation forms with a plan to get all employees to agree to a personal training agenda and take their required training.



2017 Annual Report

SAFETY TRAINING

Itemized below is the recorded percentage of required training completed by each department, according to the SOOT website and other types of formal training completed as of January 15, 2018.

Arizona Radio Observatory/Sub mm Telescope (SMT)/12 M Radio Telescope: 25%

- Current on:
 - CPR/AED
 - Harness training
 - Fork lift training

Business Office: 73%

- Eighteen employees completed 150 SOOT website videos

Directors Office: 67%

Electronic Technical Services (ETS): 71%

- Thirty-eight employees collectively viewed 1,189 SOOT website videos
- One employee completed fire extinguisher training

Imaging Technology Lab (ITL): 83%

- Work related training is up to date
- Limited SOOT website videos completed

Large Binocular Telescope Observatory (LBTO): 42%

(note LBTO training in early phases of integration into the SOOT website, Prior to 2017, the LBTO has been using their own safety training management system.)

To integrate records into the SOOT website, the LBTO completed the following actions:

- Added LBTO employees to the SOOT website
- The LBTO course on Illness, Injury, Incident Management and Coverage that was required by the end of 2017, must now be completed by mid-February 2018
- Added most-recent LBTO certification to the website
- LBTO will now add all new visitors to the SOOT website. All previously trained visitors will be added as their Site Safety Orientation training refreshers become due
- Implemented an automated 45-day reminder email of certification expiration, to the student and the site manager



2017 Annual Report

- Integrated the comprehensive LBTO Site Safety Orientation Training into the SOOT website
 - All new employees and visitors to the LBTO now complete online training before their first day at the LBTO
 - Once they arrive at the LBTO, there is now a safety walkthrough checklist (M004s00063) that the manager facilitates with the new staff member to ensure they get eyes/hands-on safety elements at the observatory
- 7-Minute Training (7MT) videos have been added to SOOT website with more to be added in the future

Goals for 2018 are to consider developing better reporting tools for the SOOT website to give managers more visibility to which employees are behind in their training

Additional Safety Training outside of the SOOT website:

- Site Safety Orientation Training for all new staff and visitors - refresher to come in 2018
- Eye Protection (7MT)
- EPA Refrigerant Management (Ozone Depleting Substances)
- Dealing with Work Stress (7MT)
- CPR/First Aid/AED for mountain and Tucson staff
- Fall Protection Rescue for all mountain staff
- ARC Flash Electrical Training for Tucson staff
- Boom/Scissor Lift for new employees
- Forklift for all mountain staff
- Liquid Nitrogen Safety, by AirGas, for all mountain staff
- Pre-Task Safety Planning

Installation of a site safety orientation monitor in the LBTO kitchen, which has provided new content each month since September. Topics covered include:

- **September/October:** Staying Hydrated, Pre-Task Plan, Equipment Sign-Off, Use of Procedures at LBTO (safety through quality control), Seat Belt Safety, Post-Fire Safety (flooding, etc.)
- **November:** Lost Time Impacts (science), Safety Shoe Policy, New Employee/Visitor Training Policy, Tool Tethering, Importance of Reporting Unusual Sounds
- **December:** Holiday Safety, Enclosure Roof Melt Policy/Procedure, Impact of Reducing Speed in Vehicles, Sleep Deprivation, Situational Awareness at Work, Work Stress, Winter Weather Driving, Vehicle Emergency Kits, Satellite Phone, Bump Cap vs. Hard Hat, Reminder of Safety Wiki Page



Environment, Health,
& Safety Manual

2017 Annual Report

Mt. Graham International Observatory (MGIO): 58%

- All employees completed Fast Attack(FA)/CPR/AED
- Three employees completed and are certified to use high lift equipment
- All maintenance employees recertified for ARC Flash Awareness/NFP70A

Mirror Lab: 92%

- Emphasis placed with the SOOT website
- Ten employees completed refresher fork lift training

Multiple Mirror Telescope Observatory (MMTO): 61%

- Two employees attended the three-day National Safety Council Congress and Exposition
- Three employees completed the 80 Hour First Responder course
- Two employees received EMT training

Mountain Operations: 51%

- Kitt Peak employees:
 - up to date on CPR/AED
 - completed limited SOOT website videos
 - one employee completed FA and Foam Truck Trainings
- Mt. Lemmon employees:
 - ARC Flash/Awareness/Qualified Electrical Worker/NFPA70E

Optical Sciences College (OSC): 0%

- All employees had safety training in 2016, but no training completed in 2017

Vatican Advanced Technology Telescope (VATT): 20%

SAFETY IMPROVEMENTS

There were many safety improvements made during the year at most of the sites.

.5 Meter Campus Telescope:

- Installed plastic see-through safety shields around dome roller system to eliminate pinch points at dome roller wheels and guides
- Installed dome shutter control system to eliminate ladder use
- Redesigned section of the observatory floor to inhibit non-essential personnel from entering the southern hemisphere surrounding the observing platform



2017 Annual Report

12 Meter Radio Telescope:

- Completed roof repairs for water leaks
- Library and operators' dormitory received detailed cleaning and repairs on the outer and inner facilities
- Floor repainted with safety warning areas in red
- Installed new safety signs to warn of pinch points
- Completed needed road repairs

ITL:

- Installed new floor tiles to eliminate tripping hazards
- Installed system for handling waste chemical barrels

Kitt Peak:

- Installed fish eye mirror at blind spot on curve in roadway to eliminate potential vehicle accidents
- Developed communication procedures and purchased equipment for preventing bear interactions

LBTO:

- Installed safety monitor in LBTO Kitchen with new content displayed monthly
- Improved communications at the site by purchasing the following equipment:
 - satellite phone
 - reliable indoor radios
 - emergency 4G repeater
 - emergency phone lines to managers dorm rooms
- Improved lighting in telescope chamber by installing lights under the crane
- Coordinating a pre-task planning for safety, both shutter door bulb seals and nine (9) latching stations were replaced without injuries or incidents
- Standardized process for continual improvement of Standard Operating Procedures (SOPs)
 - all-online (iPad, IssueTrak, VCAN) process to continually improve our procedures for safety and quality control
 - 16 SOPs updated in 2017
 - allows for safety and operational performance to be continually improved
- Installed platforms, railings, and fall protection anchors in multiple locations for safer access:
 - shutter door
 - MODS
 - ARGOS
 - LBTI
 - Liepert Unit
 - ICS
 - Upper Roof
 - Upper Crane



2017 Annual Report

-
- Established LOTO procedures for four systems
 - Installed LOTO boxes and logs at three new locations
 - Installed horn annunciator in the telescope chamber that sounds before telescope movement
 - Installed fire alarm horn and strobe light to bring our inner telescope piers and instrument conex enclosures up to fire code
 - Completed the 1st Generation Water Mitigation Projects for tarping, water gutter catchments, roof repairs, and resealing
 - Completed the Risk Management Plan Phase I, and proceeding with Facility Systems and Personnel Hazard/Risk assessments
 - Finalized a draft revision of the unified Emergency Response Contingency Plan for the MGIO site
 - Developed a Load Rating Policy/Procedure for lifting fixtures, platforms built in house, and load tested eight fixtures
 - Implemented an online Site Safety Orientation Training, with in-person walkthrough on-site
 - Implemented a Pre-Task Planning and Equipment Sign-Off Review Program with the goal to:
 - reduce the number of incidents stemming from non-standard work at the observatory, which came about as a corrective action related to a few impactful incidents (rapid venting of LUC11 cryostat, etc.)
 - Purchased Fall Rescue Systems and completed training for use above level 5
 - Provided bump caps with lights to all staff and visitors
 - Provide portable emergency vehicle kits for visitors to check out at Base Camp
 - Implemented many additions to the LBTO Safety Wiki Page
 - Created 105 New Safety IssueTrak Issues in 2017
 - 3 Minor First Aids (2 head bumps, 1 slip)
 - 1 Environmental Release (refrigerant)
 - 10 Near Miss
 - 53 Personnel Safety Related
 - 30 Equipment-Safety Related
 - 8 Related to Development of the Safety Management System (policies/programs)
 - Closed 96 Safety IssueTrak Issues in 2017 (for a summary of Safety IssueTraks, visit: <http://wiki.lbto.org/bin/view/Safety/IssueTrakSafetySummary>)



2017 Annual Report

- 22 New Safety Documents were added to the VCAN document control system which included:
 - Procedures
 - Forms
 - Checklists
 - Policy documents

e.g. PTP, ESO, Pre-Fly, JHA template, Hazard/Risk Assessment, Confined Space Evaluation, Incident Review Form, PPE Evaluation Form, LOCO/COHO procedures
- Working with UA team to develop fit-for-duty policy and altitude medicine program for LBTO and possibly implement UA wide

MGIO:

- Purchased 4 jacks for semi sized trucks which improved the ability to safely lift trucks for maintenance and repairs
- Purchased transmission jack for large trucks and equipment, which improved the ability to safely remove and install large transmissions and differentials
- Purchased car hauling trailer to make transportation of vehicles and equipment safer and more efficient
- Purchased snow tracks that were outfitted to pickup truck. This allowed us to retire our 1965 era snow cat. The snow truck will comfortably transport up to 5 people up or down the mountain in deep snow in a reasonable amount of time. The old snow cat carried 2 people, uncomfortably, and took several hours to arrive at the summit
- Installing a divider fence with access gate inside the utility building, to keep out unauthorized people to the main electrical control panel and the backup electrical equipment
- Implemented monthly check of the fire system, to assure everything is communicating off the mountain correctly. MGIO would previously call the fire service office to initiate this check, then receive a confirmation email with the results of the test

Mirror Lab:

- Completed installation of a new refractory dust collection system in the receiving area of the southwest Casting lab, for safer unpacking of refractory mirror mold parts
- Installed chain guards at several places on the new LOG

MMTO:

- Installed switch operated gates around the open pit of dock elevator
- Transformers installed to replace old PCB transformers
- Purchased new emergency and trauma equipment
- Initiated agreement with local fire department negotiated for quicker emergency response



2017 Annual Report

Mountain Operations installed the following new safety systems and upgrades:

- **Mt. Bigelow:**

- Handrail in the 300' snow tunnel to the dormitory
- Roof, support system, and concrete floor in the two-door garage
- Electrical distribution system in the old standby generator house
- Standby generator and components for modern system, on new foundation

- **Mt. Lemmon:**

- ADA compliance in #1416 Visitor Telescope
- Flooring in #1404 Visitor Telescope to eliminate tripping hazards
- Second Korea Telescope with new handrails and auto start warnings
- Electrical box covers in the power house
- Proper chiller power wiring, east and south wall wiring in the 50" Florida control room
- Obtained plan and procedure to service the 61" upper shutter rollers from the man lift

Sunnyside:

- Six new electrical outlets installed to eliminate use of extension cords

OSC Optics Shop:

- Installed new HEPA filter system to capture dust from polishing compounds
- Kick plates installed around handrail system
- Updates and replacements of First Aid Kits

SMT:

- New tie off points installed on the dome

Steward Observatory:

- Major reorganization of second floor lab areas
- Hallways cleaned on third floor
- Installed HEPA filters on air handlers in two offices
- Removed and replaced wall sheetrock and repaired building leaks in various offices
- Retiled floor in lab room N134, to eliminate tripping hazards



2017 Annual Report

VATT:

- Extended and moved a safety handrail
- Installed carpet strips to eliminate slippery stairs
- Reattached lightning rods to roof

SAFETY MEETINGS

Moving forward in 2017, the Safety Committee Members voted to conduct bi-annual meetings.

The first meeting was held on April 17, 2017. Jeff Kingsley, Associate Director of Steward Observatory, welcomed all attendees and provided an update on training compliance.

Steve Holland, Co-Chair on the Task Committee, updated the members on the Steward Observatory building air quality findings.

Cory Knop, Engineer, at MMTO, followed with a powerful presentation on “Taking Safety Home” and “Working in the Arizona Heat”.

The special guest speaker for this meeting was Rodrigo Sandoval, Head of Environmental Health and Safety for Giant Magellan Telescope Observatory (GMTO) Corporation. Rodrigo is responsible for incorporating EHS safety elements during the design, construction, and operations of the Giant Magellan Telescope project, ensuring that all employees develop an EHS Culture and consider and follow all personnel and equipment safety requirements at the Las Campanas Observatory site, Santiago office, and the Pasadena office.

The second bi-annual meeting was held on November 28, 2017. Jeff Kingsley, Associate Director of Steward Observatory, welcomed all attendees and presented a Safety Update.

Steve Holland, Co-Chair on the Task Committee, presented an update on air quality in Steward Observatory.

Julia Rosen, Health Safety Officer, from Risk Management Services, presented a refresher on Respiratory Protection.

The last two presenters were Eric Buckley, Director of MGIO, and David Carroll, Safety Engineer/Safety Manager of LBTO. They discussed the lessons learned from the very extensive Mt. Graham wildfires this past summer.

The meeting closed with a vote from all members to pass a motion for adding the new Wildland Fire Safety Section to the Steward Observatory Safety Manual.



2017 Annual Report

The 2017 Executive Safety Committee members include:

Carmen Otero, Mountain Operations

Chad Bender, Faculty

Cory Knop, MMTO

Dale Webb, Safety Manager

David Carroll, LBTO

Gabe Coronado, SO

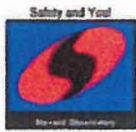
Jeff Kingsley, Associate Director SO

Karen Kenagy, Program Manager/Associate Safety Manager

This committee met eleven times during 2017. Their primary function is to oversee the Steward Observatory Health and Safety Management System. In addition, they are tasked with planning the Bi-Annual Safety Meetings, which are to be attended by all Safety Representatives from each of the Steward Observatory Departments. To oversee the system, this committee maintains a listing of all current and past safety concerns and recommends appropriate actions to rectify those concerns. Over the past eleven years there have been over 300 safety concerns the committee has addressed. There were 8 new safety concerns in 2017.

SAFETY INSPECTIONS

During 2017 there were a total of 24 inspections completed at the various sites of Steward Observatory. Altogether there were 100 safety infractions noted in those inspection reports. That brings the total infractions over the eleven (11) year period, to 1,211 infractions. Please refer to Section III, Pages 8 to 14 of the Safety Manual, to review the items considered in the site inspections.



Environment, Health,
& Safety Manual

2017 Annual Report

Near Misses: 1 Reported

Injury Report - Statistics According to Official U of A

Data: OSHA Recordable Accidents = O

Injuries = I

Illnesses = IL

Lost Time Accidents = L

Total Lost Work Days = T

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
O	04	03	04	04	06	07	08	08	04	08	13	14
I	00	03	05	06	05	14	13	12	11	23	25	06
IL	01	00	00	02	01	00	01	03	01	01	02	04
L	01	00	00	00	00	01	01	01	00	00	01	03
T	18	00	00	00	00	10	33	06	00	00	07	164

This year was the first since we started our Safety Management System, that we did not improve our Accident Record. Although we only had three (3) OSHA Recordable Accidents, we had eighteen (18) Lost Work Days due to accidents. This is the first time since 2012, we have had lost work days. It should also be noted, statistics reported for 2006 to 2012 include all of Steward Observatory, Mirror Lab, LBTO, and Vatican Observatory, but not MMTO. Since 2013, the MMTO is included in the above statistics, which results in an even larger improvement of our Safety Record.

Themes and Goals for 2017

1st Trimester: Implement Safety Training for all employees

2nd Trimester: Training for work in heat

3rd Trimester: Training for winter driving



2017 Annual Report

Steward Observatory Site Inspections

Site	Inspected	Found	Inspected	Rem	+	New	Inspected	Rem	+	New	Inspected	Rem	+	New	Inspected	Rem	+	New
Mt Lemmon	3/30/06	24	8/9/06	6	+	2	3/15/07	3	+	4	7/5/07	3		8	12/5/07	2		9
KP & Sunny	4/25/06	24	8/17/06	7	+	0	1/25/07	2	+	0	7/6/07	1		7	11/28/07	0		0
MGIO	5/3/06	2	8/22/06	0	+	0	4/4/07	0	+	0	8/29/07	0		0	1/16/08	0		1
VATT	5/3/06	28	8/14/06	24	+	1	4/4/07	13	+	7	8/29/07	14		2	1/16/08	2		1
LBT	5/4/06	9	8/22/06	0	+	3	4/4/07	0	+	0	8/29/07	0		8	1/16/08	2		1
SO & Tele	5/25/06	72	11/28/06	38	+	10	5/3/07	27	+	21	9/5/07	22		5	2/4/08	13		15
Imaging Tech	5/31/06	9	11/29/06	0	+	1	4/16/07	0	+	0	9/11/07	0		3	2/4/08	1		0
SMP	6/2/06	5	11/29/06	4	+	6	5/24/07	3	+	2	9/20/07	1		2	2/6/08	0		3
Tumamoc Hill	-	-	8/23/06	3	+	-	2/20/07	0	+	0	mothballed							
12-Meter	4/25/06	9	8/7/06	0	+	6	1/25/07	4	+	5	8/7/07	5		2	11/28/07	1		2
SMT	5/3/06	15	8/22/06	9	+	12	4/4/07	3	+	4	8/29/07	4		3	1/16/08	2		1
RFC Mirror Lab	5/23/06	23	12/7/06	10	+	10	5/24/07	6	+	17	9/20/07	14		12	2/6/08	10		5
Totals		220		101	+	51		61		60		64		52		33		38
Total items fixed				119				210				267				350		
Total infractions		220				271				331				383				421



Environment, Health,
& Safety Manual

2017 Annual Report

Continued
from above:

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C-Tele	03/31/08	4	+	13	09/04/08	8	+	5	01/21/09	3		3	07/07/09	1		3
KP & Sunny	05/08/08	0	+	4	08/07/08	1	+	1	12/16/08	2		0	06/04/09	2		7
MGIO	06/16/08	0	+	0	10/01/08	0	+	0	03/11/09	0		0	07/13/09	0		0
VATT	06/16/08	0	+	0	10/01/08	0	+	0	03/11/09	0		0	07/13/09	0		0
LBT	06/16/08	0	+	4	10/01/08	0	+	1	03/11/09	0		1	07/13/09	0		0
SO Office & Labs	06/19/08	17	+	11	11/05/08	10	+	10	04/02/09	8		30	07/28/09	10		6
Imaging Tech		0	+	0	11/06/08	0	+	2	05/18/09	0		1	08/25/09	0		0
LBTI Lab & So Te	06/17/08	0	+	2	11/20/08	0	+	11	04/9&5/6	1		4	08/19/09	0		2
Tumamoc Hill	mothballed		+		mothballed		+		mothballed				07/07/09	0		0
12-Meter	05/08/08	2	+	2	08/07/08	0	+	0	12/16/08	0		3	06/04/09	0		3
SMT	06/16/08	1	+	4	10/01/08	1	+	2	03/11/09	1		2	07/13/09	3		2
SO Mirror Lab	06/17/08	8	+	7	11/20/08	3	+	2	04/15/09	0		29	07/28/09	6		2
Totals		32	+	47		23		34		15		73		22		25

Total items fixed

389

445

487

553

Total infractions

468

502

575

600

Continued
from above:

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C_Tele	11/09/09	1	+	0	04/29/10	0	+	2	12/08/10	1		0	04/28/11	1		1
KP & Sunny	11/18/09	0	+	1	04/14/10	0	+	4	11/30/10	0		2	03/08/11	0		0
MGIO	11/10/09	0	+	0	05/12/10	0	+	1	09/21/10	0		0	05/26/11	0		0
VATT	11/10/09	0	+	0	05/12/10	0	+	0	09/21/10	0		1	05/26/11	0		0
LBT	11/10/09	0	+	0	05/12/10	0	+	0	09/21/10	0		3	05/26/11	1		2
SO & Annex	02/04/10	7	+	12	06/22/10	5	+	6	01/06/11	6		14	07/19/11	5		18
Imaging Tech	03/02/10	0	+	0	07/21/10	0	+	2	01/06/11	0		0	07/12/11	0		0
LBTI & Solar Tra	02/08/10	1		1	06/23/10	0	+	5	12/14/10	0		2	07/12/11	0		2
Tumamoc Hill	mothballed		+		mothballed		+		mothballed				mothballed			
12-Meter	11/18/09	0	+	1	04/14/10	1	+	3	11/30/10	1		2	03/08/11	0		1
SMT	11/10/09	2	+	1	05/12/10	0	+	4	09/21/10	2		0	05/26/11	2		2
SO Mirror Lab	03/05/10	1	+	28	07/15/10	3	+	4	11/22/10	0		7	08/02/11	0		4
Totals		12	+	44		9		31		10		31		9		30

Total items fixed

588

635

665

697

Total Infractions

644

675

706

736



Environment, Health,
& Safety Manual

2017 Annual Report

Continued
from above:

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C Tele	11/17/11	0	+	2	05/16/12	0	+	7	11/19/12	5		2	05/28/13	3		2
KP & Sunny	11/22/11	0	+	2	05/29/12	0	+	0	11/15/12	0		0	05/21/13	0		6
MGIO	09/19/11	0	+	1	05/09/12	0	+	1	11/08/12	0		0	05/02/13	0		0
VATT	09/19/11	0	+	0	05/09/12	0	+	0	11/08/12	0		0	05/02/13	0		0
LBT	09/19/11	0	+	4	05/09/12	1	+	0	11/08/12	0		1	05/02/13	0		3
SO & Annex	02/27/12	8	+	18	09/17/12	8	+	6	04/09/13	9		11	11/20/13	12		14
Imaging Tech	05/01/12	0	+	1	01/14/13	0	+	0	06/10/13	0		2	11/04/13	0		0
Solar Tracker	03/20/12	0	+	1	08/14/12	1	+	1	03/26/13	0		2	11/25/13	0		0
Optics Shop			+				+		12/18/12	0		18	05/23/13	2		4
12-Meter	11/22/11	0	+	0	05/29/12	0	+	1	11/15/12	0		0	05/21/13	0		0
SMT	09/19/11	1	+	0	05/09/12	0		0	11/15/12	0		0	05/02/13	0		3
SO Mirror Lab	02/29/12	0	+	11	10/04/12	0	+	5	04/09/13	0		11	11/27/13	0		8

Totals		9	+	40		10		21		14		47		17		40
Total items fixed		727				766				783				827		
Total infractions				776				797				844				884

Continued
from above:

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C Tele	11/05/13	3	+	3	04/08/14	4	+	2	10/01/14	2		2	04/14/15	1		3
KP & Sunny	11/12/13	1	+	3	04/01/14	2	+	2	11/12/14	2		1	04/08/15	0		2
MGIO	09/25/13	0	+	4	05/13/14	0	+	1	09/18/14	0		0	05/19/15	0		0
VATT	09/25/13	0	+	0	05/13/14	0	+	1	09/18/14	0		1	05/19/15	0		0
LBT	09/25/13	0	+	0	05/13/14	0	+	0	09/18/14	0		0	05/19/15	0		2
MMTO	10/24/13	0	+	32	06/11/14	0	+			0				0		
SO & Annex		0	+		05/21/14	14	+	6	11/24/14	6		15	05/18/15	3		12
Imaging Tech		0	+		05/20/14	0	+	0	12/02/14	0		3	05/11/15	0		2
Solar Tracker		0	+		05/19/14	0	+	0	11/20/14	0		4	05/20/15	1		0
Optics Shop	11/26/13	0	+	12	06/03/14	2	+	6	11/19/14	2		0	05/12/15	1		0
12-Meter	11/22/13	0	+	0	04/01/14	0	+	0	11/12/14	0		7	04/08/15	4		3
SMT	09/25/13	2	+	3	05/13/14	3		0	09/18/14	0		1	05/19/15	1		1
SO Mirror Lab		0	+		05/22/14	0	+	1		0			02/09/15	0		4

Totals		6	+	57		25		19		12		34		11		29
Total items fixed		878				916				948				983		
Total infractions				941				960				994				102



Environment, Health,
& Safety Manual

2017 Annual Report

Continued
from above:

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C Tele	09/30/15	1	+	6	04/05/16	3	+	10	09/06/16	7		10	03/29/17	9		3
KP & Sunny	11/10/15	1	+	0	03/29/16	0	+	1	10/11/16	0		0	03/23/17	0		5
MGIO	09/16/15	0	+	0	05/10/16	0	+	0	09/21/16	0		0	05/11/17	0		2
VATT	09/16/15	0	+	1	05/10/16	0	+	0	09/21/16	0		0	05/11/17	0		1
LBT	09/16/15	0	+	1	05/10/16	0	+	5	09/21/16	0		3	05/11/17	0		2
MMTO	10/20/15	0	+	6	05/03/16	0	+		10/31/16	1		5		0		
SO & Annex	11/09/15	7	+	9	05/02/16	5	+	3	11/14/16	7		6	04/11/17	10		8
Imaging Tech	11/23/15	0	+	0	04/11/16	0	+	1	11/29/16	0		0	04/19/17	0		3
Solar Tracker	12/09/15	0	+	1	05/03/16	0	+	2	12/19/16	0		2	05/30/17	0		0
Optics Shop	10/19/15	1	+	2	04/13/16	1	+	3	11/21/16	2		1	05/01/17	3		3
12-Meter	11/10/15	5	+	5	03/29/16	2	+	0	10/11/16	2		0	03/23/17	2		4
SMT	09/16/15	0	+	0	05/10/16	0		0	09/21/16	0		0	05/11/17	0		0
SO Mirror Lab	12/14/15	0	+	7	05/09/16	0	+	3	12/05/16	0		0	05/08/17	0		5

Totals		15	+	38		11		28		19		27		24		36
Total items fixed		1008				1050				1070				1092		
Total infractions				1061				1089				1116				1152

Site	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New	Inspected	Rem.	+	New
MT Lem & C Tele	10/03/17	7	+	4		0	+	0		0		0		0		0
KP & Sunny	10/10/17	3	+	3		0	+	0		0		0		0		0
MGIO	09/26/17	1	+	0		0	+	0		0		0		0		0
VATT	09/26/17	0	+	0		0	+	0		0		0		0		0
LBT	09/26/17	0	+	2		0	+	0		0		0		0		0
MMTO	11/13/17	0	+	3		0	+	0		0		0		0		0
SO & Annex	10/24/17	11	+	38		0	+	0		0		0		0		0
Imaging Tech	11/20/17	0	+	0		0	+	0		0		0		0		0
Solar Tracker		0	+	0		0	+	0		0		0		0		0
Optics Shop	11/14/17	0	+	4		0	+	0		0		0		0		0
12-Meter	10/10/17	3	+	5		0	+	0		0		0		0		0
SMT	09/26/17	0	+	0		0	+	0		0		0		0		0
SO Mirror Lab	12/11/17	0	+	5		0	+	0		0		0		0		0

Totals		25	+	64		0		0		0		0		0		0
Total items fixed		1127				0				0				0		
Total infractions				1211				0				0				0



2017 Annual Report

Prepared by:

Dale A. Webb
Dale A. Webb
Safety Manager

Karen Kenagy
Karen Kenagy
Assistant Safety Manager

Approver:

Buell Jannuzi
Buell Jannuzi
Director

Jeffrey S. Kingsley
Jeffrey S. Kingsley
Associate Director