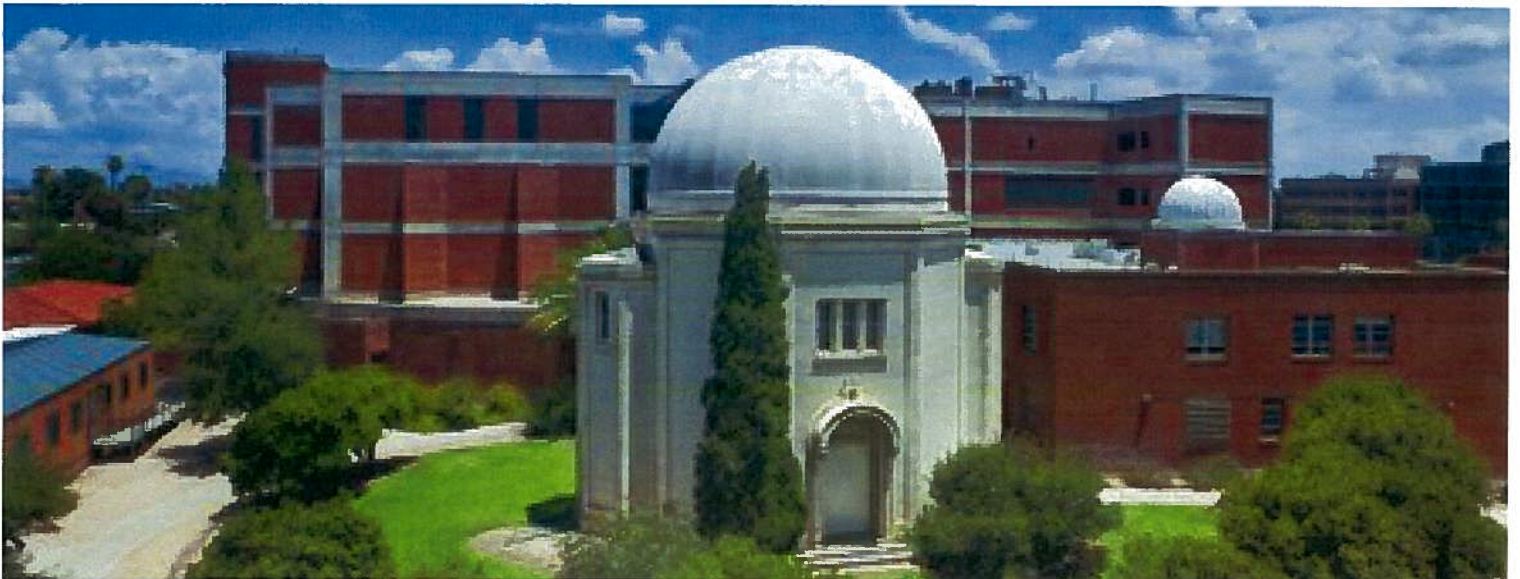


Environment, Health,
& Safety Manual

2009 Annual Report



THE STEWARD OBSERVATORY ANNUAL SAFETY REPORT 2009





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Part of the plan for 2009 was to expand and refine the Steward Observatory Safety Management System. We began the year with six Steward employees from Large Binocular Telescope (LBT), Steward Observatory (SO), Steward Observatory Mirror Laboratory (SOML), and Multiple Mirror Telescope Observatory (MMTO) attending the National Science Foundation (NSF) Facilities Safety Meeting which was held here in Tucson. We all learned a lot of new concepts, particularly ideas on safety in mountain driving and facility management, and this was a nice example of our safety outreach program as there were over 100 attendees from observatories around the world. Later in the year, Dale Webb, Safety Manager and Karen Kenagy, Assistant Safety Manager attended the National Safety Council Annual Meeting and also gave an invited talk at the 25th Tri University Conference of Risk Management. This talk emphasized the close cooperation between the University Risk Management Department and the Steward Observatory safety efforts.

During this year major new safety equipment was added at the Mirror Lab. This included a new, large capacity HEPA filtered Dust Collector that was planned in large part by our Graduate Student Intern Delayne Caseman and Facility Engineer, Bruce Hille. The new dust collector system is an improvement by a factor of five times better than the old system. The next new equipment is the new Handling ring fall arrest system designed by Principal Engineer, Kurt Kenagy. Fortunately, no one has been hurt in the past while working and climbing on this ring, and hopefully now, no one can get hurt or fall.

We began implementation of our new policy on establishing Safety Performance metrics with the expectation that we would first start with managers and supervisors and later expand to all employees. The implementation went slower than anticipated but is now moving forward.

There were many other major accomplishments in 2009. Among them are:

1. We had our first Safety Inspection done by non-affiliated safety professionals who volunteered to inspect and audit the Mirror Lab with Karen.
2. We completed purchase of ARC Flash equipment for all groups that might have a need for it. And we began plans for rating all electrical boxes and equipment as required under NFPA 70E.
3. We wrote a Pandemic Plan for the Observatory that was in line with the requirements of the University of Arizona plans.
4. We added four new sections in the safety manual on Performance Metrics, Pandemic Plans, Student Worker Safety, and a procedure for updates to the manual.
5. The new procedure referred to above was developed for assuring that all new policies get proper approval and documentation before being inserted in the safety

- manual. Proper approval includes a positive vote from the Safety Committee, and signatures of Steward Observatory and U of A Risk Management managers.
6. In the area of Ergonomics, a new "Guts & Butts" program has been initiated for the Mirror Lab Casting Team and so far is very promising and well accepted.
 7. We have had a variety of invited speakers at our Quarterly Safety Meetings including Laura Kitt-Hailey, the Director for Health and Safety with the American Red Cross who spoke on Emergency Preparedness at our February meeting. In May, Frank Demer gave a presentation on the new U of A Lab Chemical Safety Management System. In August, John Little discussed the development of a plan for the LBT Rotation/Enclosure System. Also, at the August 13th Quarterly Meeting, Denise Childress of W.W. Grainger gave a presentation on Grainger's catalog of safety equipment and resources, and Patti Woodcock of the Pima County Health Department gave us an update on the H1N1 Swine Flu Virus. At our December, 14th Quarterly Meeting, Ned Franz of the Vatican Observatory, gave a talk on the value of Near Miss Reports and Jim Vaughn, Regional Safety Manager of Sturgeon Electric spoke on the value of Electrical Safety training.
 8. There were also a number of major improvements at the telescope sites among them were new orange cables around the LBT Telescope on the fifth floor, a new mirror cover on the Ray White telescope which can be operated from the floor and no longer requires the operator to climb a ladder and go up to an unguarded platform, and new guard rails and platforms at the Vatican Telescope, all of which were thought up and installed without requests from safety personnel!
 9. Major efforts were expended on Test Tower Safety and safety training during this whole year. This effort, of course, is an ongoing effort as the tower is constantly being modified, or so it seems.
 10. The Potty Poster Program continues to be a great success. Karen is often asked when the next poster is going to be posted. And even more important, the poster system has already saved a life! Karen was told recently by a Steward employee that she read the cardiac arrest poster several times and soon after was alone with a friend who went into cardiac arrest and she knew what to do and did and saved his life!
 11. There were a minimum of 15 individual training programs that were attended by at least 6-8 persons. Some of the classes held this year were: Hearing Training, NFPA 70E Arc Flash Training, Articulating Boom and Scissors Lift, Annual Audiograms, Respirator and Fit Tests, Test Tower Training, Ergonomics, USFS Chain Saw Safe Operating Procedures, ADEQ Confined Space, Trench and Evacuation, Traffic Control, AZ Dept of Environmental Quality Water System and Water Treatment Operator Certification, CPR, First Aid, AED Training, Lockout/Tagout Training and Fall Arrest.



More on safety inspections/audits

In the first three annual reports there were two or three sentences that described the number of safety inspections conducted, the number of infractions found and the number fixed, along with the percentage fixed, a number intended to demonstrate the progress. In fact, the safety inspection process is a major component of the overall Safety Management System and deserves more visibility. Before the first inspection was conducted, all of the managers who were responsible for facilities were given a document that outlined in general what would be looked at during the safety inspections as well as the OSHA references for those items. This was done to prepare them for the process as well as to make the process transparent to all employees.

There are a total of 12 different safety inspections that can be seen in detail in the attached Site Inspection Report which is shown and reviewed at each Quarterly Safety Meeting. At the start of each inspection a discussion of safety concerns takes place between the inspector(s), the department manager and usually the safety committee member from that area. We then proceed as a team to open every door, look at every machine, and discuss work routines. Because we traverse almost every square foot of space, all employees see that an effort is being made to make their workplace safer and the process itself is indeed comforting to many.

There have been major differences in how these inspections have been received by the responsible managers. For example at the first inspection of the Imaging Technology Laboratory, we took Frank Demer from Risk Management with us and he pointed out some chemical tanks that lacked labels describing contents, and some procedural items. Within two weeks we had a letter from the safety coordinator of that group informing us that the labels and other infractions had been fixed or implemented. In other areas we at first had infractions that would stay on the inspection for a year or more without being fixed. It sometimes took a change of managers to get action initiated in the implementation of safety improvements.

While some of the safety infractions may be simple and perhaps not dangerous in themselves such as open electrical junction boxes, they could be more complex like operating gas furnaces in closed areas without carbon monoxide detectors, or having employees who work at heights without adequate tie off points, or tools and machines with open belts and pulleys where fingers could be easily cut off. We even had work areas for employees constructed in such a manner that fire sprinkler systems would be ineffective. The paper reports on the inspections for the first four years stand almost 5 inches high if placed in a stack. At the end of the ninth inspection cycle there were 600 safety infractions reported. At the end of the eighth cycle, 553 of the 575 infractions had been repaired or fixed, a fix rate of 96%. For comparison, at the end of the first cycle three years ago, 119 of 220 infractions were fixed at a rate of 54%.



The good news is that now the reports show few infractions and the new infractions are fixed promptly in most cases. The even better news is that now part of many inspection reports is devoted to highlighting safety improvements made by the departments without mention or prodding by the safety inspector! All employees are encouraged to look at the attached Site Inspection Report to see the progress in their work area or department.

Statistics According to Official U of A Data:

	2009	2008	2007	2006
OSHA Recordable Accidents	04	08	13	14
Injuries	11	23	25	26
Illnesses	01	01	02	04
Lost Time Accidents	00	00	01	03
Total Lost Work Days	00	00	07	164

Again, this was an improvement over the last year but still not ZERO, which is the goal!

Goals for 2010:

1. The first Quarter will emphasize Manager and Supervisor Training, with Mark Norton, the Assistant Director of Arizona OSHA as an invited speaker.
2. In the second quarter we will explore legal activities and responsibilities and Chuck Keller will speak to our Safety Committee and management on these issues.
3. The third quarter will be dedicated to obtaining an outside audit of the entire Steward Observatory Safety Management System. The fourth quarter will be dedicated to defining training requirements and developing a formal training program for each work group.
4. Other goals are the full implementation of the ARC Flash Program, more emphasis on Near Miss Reports, finish the Test Tower Rescue Plan and training, continue emphasis on the Safety Outreach Program, and hopefully to develop a policy for Distracted Driving and Working.

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Steward Observatory Site Inspections

Site	Inspected	Found	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New			
Mt Lemmon	03/30/06	24	08/09/06	6 + 2	03/15/07	3 + 4	07/05/07	3	8	12/05/07	2	9	
KP & Sunny	04/25/06	24	08/17/06	7 + 0	01/25/07	2 + 0	07/06/07	1	7	11/28/07	0	0	
MGIO	05/03/06	2	08/22/06	0 + 0	04/04/07	0 + 0	08/29/07	0	0	01/16/08	0	1	
VATT	05/03/06	28	08/14/06	24 + 1	04/04/07	13 + 7	08/29/07	14	2	01/16/08	2	1	
LBT	05/04/06	9	08/22/06	0 + 3	04/04/07	0 + 0	08/29/07	0	8	01/16/08	2	1	
SO & Tele	05/25/06	72	11/28/06	38 + 10	05/03/07	27 + 21	09/05/07	22	5	02/04/08	13	15	
Imaging Tech	05/31/06	9	11/29/06	0 + 1	04/16/07	0 + 0	09/11/07	0	3	02/04/08	1	0	
SMP	06/02/06	5	11/29/06	4 + 6	05/24/07	3 + 2	09/20/07	1	2	02/06/08	0	3	
Tumamoc Hill	-	-	08/23/06	3	-	02/20/07	0 + 0	mothballed					
12-Meter	04/25/06	9	08/07/06	0 + 6	01/25/07	4 + 5	08/07/07	5	2	11/28/07	1	2	
SMT	05/03/06	15	08/22/06	9 + 12	04/04/07	3 + 4	08/29/07	4	3	01/16/08	2	1	
SO Mirror Lab	05/23/06	23	12/07/06	10 + 10	05/24/07	6 + 17	09/20/07	14	12	02/06/08	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	

Site	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New			
Continued from above:											
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

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Continued
 from previous:

Site	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New
MT Lem & C_Tele	11/09/09	1 + 0		+				
KP & Sunny	11/18/09	0 + 1		+				
MGIO	11/10/09	0 + 0		+				
VATT	11/10/09	0 + 0		+				
LBT	11/10/09	0 + 0		+				
SO & Tele		+		+				
Imaging Tech		+		+				
Subreflec Lab		+		+				
Tumamoc Hill	mothballed	+		+				
12-Meter	11/18/09	0 + 1		+				
SMT	11/10/09	2 + 1		+				
SO Mirror Lab		+		+				
Totals		3 + 3		0 0		0 0		0 0

Total items fixed
 Total Infractions

Continued
 from above:

Site	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New	Inspected	Rem. + New
Mt Lemmon		+		+				
KP & Sunny		+		+				
MGIO		+		+				
VATT		+		+				
LBT		+		+				
SO & Tele		+		+				
Imaging Tech		+		+				
Subreflec Lab		+		+				
Tumamoc Hill		+		+				
12-Meter		+		+				
SMT		+		+				
SO Mirror Lab		+		+				
Totals		0 + 0		0 0		0 0		0 0



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Prepared by:

Dale A. Webb
Safety Manager

Karen Kenagy
Assistant Safety Manager

Approver:



Jeffrey S. Kingsley
Associate Director