



Environment, Health,  
& Safety Manual

# 2010 Annual Report



# THE STEWARD OBSERVATORY ANNUAL SAFETY REPORT

## 2010





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Shown below are the Goals that we set for the year 2010 in the 2009 Annual Report:

## 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.

The first two goals were completed with very good success, according to several persons. The outside audit proved to be an expensive item to accomplish and so it was put off for another year due to re-arranging our budgets in line with the reduced revenues. There was some progress in developing a formal training program but it is certainly not finished and our goal is to have an on-line, updatable training system complete with objectives and completed training records. Implementation of the ARC Flash Program also proved to be very expensive, although we did get a very good start on this and now we are hoping to do more, but in conjunction with the Facilities Department so we can share expenses. The Test Tower Rescue Plan and training will never be complete as it is an ongoing program, however considerable effort has been expended this year and we do have a plan that is now operational and we all feel much safer. We have followed up on several Near Miss Reports and we have continued our Safety Outreach program with Karen and Dale attending the Safety Expo and joining the American Society of Safety Engineers and attending all of their monthly meetings. And, we did complete the first draft of Section #51 of the Safety Manual with a policy on "Distractions".

Other notable accomplishments were the rewrite of our Prescription Safety Eye Glass program and the increase in cost reimbursement from \$50 to \$100. This resulted in a revision to Section # 34 in our Safety Manual. We also rewrote section # 20 of our manual to include the new university regulations on disposing of fluorescent bulbs.



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Perhaps the most exciting event of the year was the ASSE (American Society of Safety Engineers) Community Safety Award that was presented to us on May 21, 2010. This award was presented to Jeff Kingsley in the presence of a large group of ASSE members as well as Karen Kenagy, Dale Webb, Russ Warner, Bill Hoffman and Steve Holland of the Risk Management and Safety Department. The specific words used at the presentation were: "The Steward Observatory's Safety Management System represents a unique approach in an academic, research and production environment to managing occupational safety, health, and environmental risks."

Aside from the stated goals for the year and progress to them stated above, there were a number of other accomplishments of the Safety Committee this year. We completed the eleventh and twelfth Safety Inspection Cycles in which a total of 62 safety infractions were identified. At the end of the eleventh cycle we had a fix rate of 98.5 %. During the year we had Risk Management participate in a number of inspections and we had an outside Safety Professional (Mike Flynn of Granite Construction) participate as well. One interesting fact is that at each of the inspection cycles there were several major and/or minor safety improvements made and reported that were not done as a result of requests by a safety representative, but at the initiative of personnel in the work area. Some of the improvements are:

01. Implementation of a new fall arrest system at the 90 inch telescope
02. New ramp installed for safer installation of vacuum pumps at the VATT
03. Test Tower 4<sup>th</sup> Level Power Design for LSST M1 and M3 Electronics
04. Eliminated fall risk and requirement for use of fall protection on the Large Polishing Machine in the Mirror Lab
05. Added anchored stations and wire rope for edge barrier in mirror lab
06. New safety railings were fabricated for the observers platform at the 90Inch
07. New safety chains around the SMT loading dock and the second floor walkway
08. Major safety improvements at the Solar Tracker
09. LOG System Ventilation at the Mirror Lab has been replaced
10. Began implementation of NFPA 70E in Casting area of Mirror Lab
11. More work done on the Mount Graham Fire Warning System, but still not complete even for just the telescopes.
12. Completed a major lift of SPM 6.5 M Mirror and finished safety summary
13. Instituted SOML Weekly Work Plan as an additional Safety Planning Device

In the area of Training there were significant accomplishments. We held two major training sessions for managers, supervisors and the safety committee. The first session was put on by Mark Norton, Assistant Director, Arizona Division of Occupational Safety & Health and we all learned of our responsibilities in the area of Safety. The next session featured our guest speaker Chuck Keller, who came out of Phoenix to provide this group with a view on their legal obligations with respect to safety at Steward



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Observatory. Chuck is an experienced lawyer defending employers in OSHA and MSHA matters.

There were numerous other training activities including:

1. MGIO Safety and Regulatory Training put on by Danny L. Raines
2. OSHA 300 Log Training
3. Fire stopping seminar put on by Risk Management
4. OSHA Electrical High Voltage Federal Standards (UCSD 3096) class
5. Scissor lift and articulating boom training
6. Training - Ladder Safety
7. Respirator Fit Testing
8. annual audiogram testing and training
9. May - Fall Protection Training
10. Compressed Gas Safety Training
11. Hearing Conservation Training (Dr. Velenosky)
12. Training Notification – Ergonomics
13. Tower Rescue Training
14. Fall Protection Training
15. ASSE Fall Protection Seminar
16. Ladder Safety
17. Lock-Out/Tag-Out
18. General Electric Safety (for those employees who work IT, electronics, and with lab equipment -- not intended for individuals who work on high voltage) .
19. Training Notification - AED/CPR
20. Workplace Safety for office environment
21. Lewellyn Electrical Safety and High Voltage Training
22. Proper disposal of fluorescent bulbs
23. Welding Webinar Review
24. CNC Fadal Ventilation, Noise and Particulate Exposure Presentation
25. Test Tower Rescue with Tucson Fire Department



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## Statistics According to Official U of A Data:

	2010	2009	2008	2007	2006
OSHA Record Accidents	08	04	08	13	14
Injuries	12	11	23	25	26
Illnesses	03	01	01	02	04
Lost Time Accidents	01	00	00	01	03
Total Lost Work Days	06	00	00	07	164

This year we had a step back in our accident record although still an improvement over the first three years in terms of total injuries, but still not ZERO, which is the goal! It should be noted that all of the above statistics include the Steward Observatory, the LBT, and the Steward Observatory Mirror Laboratory. None of the above totals include injury information on the MMT Observatory. The MMT Observatory totals for 2010 were 5 injuries, 2 of which were recordable. We do not have comparable statistics for MMT for the first three years.

## Goals for 2011:

1. The First Quarter goal is to emphasize Safe Driving, to investigate several Near Miss accidents on Mt Graham, and to finalize our plans and policies to assure that our employees and visitors drive safely.
2. Our Second Quarter goal is to encourage all employees to read the safety manual and the Annual Safety Reports, and to document that action.
3. This Third Quarter goal is to initiate and complete a Safety Management System Assessment with participation from outside safety experts.
4. And finally our Fourth Quarter goal is to make additional progress on developing a Training Program that assures that each employee knows what training he or she needs and then obtains that training with provisions to document that information.



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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	
<b>Totals</b>		<b>220</b>		<b>101</b>	<b>+</b>	<b>51</b>		<b>61</b>		<b>60</b>		<b>64</b>		<b>52</b>		<b>33</b>		<b>38</b>
Total items fixed				119				210				267				350		
Total infractions				220				271				331				383		

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			
LBT 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			
<b>Totals</b>		<b>32</b>	<b>+</b>	<b>47</b>		<b>23</b>		<b>34</b>		<b>15</b>		<b>73</b>		<b>22</b>		<b>25</b>		
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		+					+									
<b>Totals</b>		<b>3</b>	<b>+</b>	<b>3</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	

Total items fixed  
Total InfractionsContinued  
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		+					+									
<b>Totals</b>		<b>0</b>	<b>+</b>	<b>0</b>			<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>		<b>0</b>	



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## Steward Observatory Site Inspections

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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		

<b>Totals</b>	<b>220</b>	<b>101</b>	<b>+</b>	<b>51</b>		<b>61</b>	<b>60</b>		<b>64</b>	<b>52</b>		<b>33</b>	<b>38</b>				
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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
MT Lem & C-Tele	03/31/08	4	+	13	09/04/08	8	+	5	01/21/09	3	3	3	07/07/09	1	3	
KP & Sunny	05/08/08	0	+	4	08/07/08	1	+	1	12/16/08	2	0	0	06/04/09	2	7	
MGIO	06/16/08	0	+	0	10/01/08	0	+	0	03/11/09	0	0	0	07/13/09	0	0	
VATT	06/16/08	0	+	0	10/01/08	0	+	0	03/11/09	0	0	0	07/13/09	0	0	
LBT	06/16/08	0	+	4	10/01/08	0	+	1	03/11/09	0	1	1	07/13/09	0	0	
SO Office & Labs	06/19/08	17	+	11	11/05/08	10	+	10	04/02/09	8	30	30	07/28/09	10	6	
Imaging Tech		0	+	0	11/06/08	0	+	2	05/18/09	0	1	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	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	3	06/04/09	0	3	
SMT	06/16/08	1	+	4	10/01/08	1	+	2	03/11/09	1	2	2	07/13/09	3	2	
SO Mirror Lab	06/17/08	8	+	7	11/20/08	3	+	2	04/15/09	0	29	29	07/28/09	6	2	

<b>Totals</b>	<b>32</b>	<b>+</b>	<b>47</b>		<b>23</b>	<b>34</b>		<b>15</b>	<b>73</b>		<b>22</b>	<b>25</b>				
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Total items fixed	389				445				487			553				
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