

**Great Basin Engine Academy
Executive Summary
2010**

Introduction

The third annual Great Basin Engine Academy (GBEA) was held in Layton, Utah at the Davis Conference Center and the Uinta-Wasatch-Cache National Forest Air Tanker Base located at Hill Air Force Base April 26 – May 7, 2010. There were 31 nominations received, and 24 students selected to attend the academy. Of the 31 nominations, one nominee was from the Arizona Strip BLM and the remaining individuals were Region 4 Forest Service employees. Of the 24 students who attended, 22 successfully completed the academy.

The top student, Chad Sewell from the Sawtooth National Forest, was coached by CorDell Taylor. Chad received a score of 98.2%, while the class average was 91.0%. The top engine company was Type 6 Engine Company 2, which consisted of Ash Phelps from the Caribou/Targhee National Forest, Riley Rhodes from the Salmon/Challis National Forest, Alan Syphus from the Arizona Strip BLM, and Kelly Lewis from the Sawtooth National Forest. The company was coached by Aaron Fischer and had a combined score of 94.2%.

The testing consisted of two pretests, a PM test, a stationary pumping practical, a driving pumping practical, two driving skills tests, a mid-term, and a final exam. Successful completion of this course requires a score of 80% overall. Any score less than 70% is not a passing score (this does not include the pretest scores). Students can pass academically and still fail in the practical exams. If a student passes the academic portions, but fails the practical portions, he or she will be encouraged to return to the engine academy the next year to complete the practical portions of the academy. Failure academically will require a student to retake the entire 2-week academy.

The Academy mission is to provide opportunities for students to improve their driving skills in a variety of environments, refine their pumping and hydraulics skills, become more proficient in their operation and maintenance of fire apparatus, and provide the home unit with a comprehensive evaluation of the student. The Academy objectives are as follows:

- A.** Upon completion of the Great Basin Engine Academy, each trainee will demonstrate a working knowledge of the Region 4 Type 6 and 4 Engines. Increased knowledge of maintenance, operation, capability, and limitations of these engines is the academy's main focus. There are three core sections of instruction:
 - 1.** Unit I - Vehicle and Pump Maintenance
 - 2.** Unit II - Driving
 - 3.** Unit III - Pumping and Hydraulics

- B.** Emphasis throughout the engine academy is placed on increasing the trainees' level of safety awareness in all aspects of fire engine operations. In addition, the underlying goal of the Engine Academy is to realize a future cost savings to the government through:
 - 1.** Recognition of potential equipment breakdowns or malfunctions caused by improper or neglected preventative maintenance procedures
 - 2.** Increased level of safety awareness, which may prevent avoidable accidents, therefore fewer dollars spent on lost-time accidents and/or vehicular damage

3. Increased level of skill and proficiency with fire engine operations through formal training, increasing wildland fire effectiveness

C. Employee Development

1. Provide the foundation for future Managers, Engine Captains, Engine Operators, Lead Crew, and Senior Firefighters
2. Provide students with increased level of awareness as to their capabilities and supervisory responsibility

This executive summary will briefly review events that occurred in each functional group, as well as list the lessons learned and opportunities for improvement. The Engine Academy Team is comprised of 31 personnel. The Great Basin Engine Academy Organization Chart is located in Appendix A.

Command

A vision for the planning, management, presentation, and implementation of the Great Basin Engine Academy is to eventually have most of the positions on the management team filled by personnel from the engine community who are graduates from a Forest Service Regional Engine Academy (Region 3, 4 or, 5). A target date for this vision is 2011. The primary limiting factor is having enough qualified and motivated engine academy graduates available in Region 4 to participate.

The 2009 GBEA had 34 management team members with 14 positions being held by Engine Academy Graduates. At the 2010 GBEA, there were 42 management team members and 27 positions were held by Engine Academy Graduates. There were additional team members due to shadow positions that were added to train Engine Academy Graduates in various team positions. By 2011, almost all of the team members should be Engine Academy Graduates.

The 2010 GBEA Management Team was 100% Forest Service personnel, while 23 students were Forest Service personnel with one individual from the Arizona Strip BLM. Federal wildland fire management agencies in the Department of Interior will be approached in 2011 to see if there is any interest in participating in the academy.

Safety

During the three weeks of the 2010 Great Basin Engine Academy (“Zero Week” and two weeks of training), there was one notable injury (shoulder muscle strain) and no vehicle accidents. There were a total of 15 JHA’s reviewed and signed by all team members, and students that worked and attended GBEA. JHAs that were incorporated include the following: cone courses, fieldwork, traffic accidents, driving, fire suppression, UTV use (new), pumping (new), vehicle fire, testing fire hose, personal safety, auto shop, working around engines, vehicle maintenance, office work, and off-road driving. Dirk Huber presented a Lessons Learned power point that covered the Ashley NF heavy engine rollover in 2007. All safe or unsafe acts during the GBEA were discussed daily at briefings. A new lessons learned bullet list for safety was developed for the 2011 GBEA.

Safety Officers Role is to:

1. Design and complete the Job Hazard Analysis (JHA’s) needed prior to the Academy.
2. Attach a daily safety message to the ICS-202 within the Incident Action Plan (IAP).
3. Complete the Medical Plan for the IAP.
4. Deliver the morning safety briefing to the team and students.

5. Serve as a vital role in accident reporting and investigation for any medical injury or accident that could potentially have adverse effects on the Academy.
6. Heighten the level of situational awareness throughout the Academy.
7. Help facilitate and provide any extra support to those groups/functions that needed it.

Information

Proper photo and video authorization was obtained from the Commander of the 75th Air Base Wing in March 2010. Photo/filming procedures were strictly followed.

No media event was held during the 2010 GBEA. A news release was sent out to the media with a couple of photos on May 7, 2010.

An open invitation to visit the Academy was given to the Regional Leadership Team and the Regional FMO's. Five Forest Service individuals took advantage of the invitation and visited the Academy. Feedback from these individuals was extremely positive.

Packets were put together for FS employees and included the following:

- 2009 Executive Summary
- Briefing Paper
- Engine Company Student List

A DVD containing photos and video footage taken during the academy of student's activities was prepared and given to students, team members, and military personal. The DVD is also being used for historical documentation.

Certificates of Appreciation were completed and distributed to individuals that supported the academy. Hand written thank you notes were also done for home owners within the WUI training area.

Planning

The Planning Section Chief is instrumental in facilitating daily briefings for the team and the students, classroom sessions, exams, and the Team AARs. This position allows the team to stay on track, and the flexibility to make adjustments with little interruption to the students in the academy.

During the 2010 GBEA Russ Marchion, a GBEA graduate shadowed the Planning Section Chief, Bill Neckels. The objective was to train Russ so that he could perform in that position at the 2011 GBEA. Russ shadowed Bill for week "0" and the first week of the academy. Bill was unable to attend the academy the second week and Russ did an excellent job functioning as the Planning Section Chief on his own.

Starting at the 2011 GBEA, the Planning Section Chief will also function as the Safety Officer, which will save time and money. Additionally, it is desirable that the Planning Section Chief have knowledge in all facets of the Academy, so that the individual can answer student questions during exams and briefings.

Logistics

The Logistics Section consisted of a Support Group, a Section Chief, and a Section Chief Shadow. The Support Staff consisted of Ben Krupski and Milena Rockwood as the two squad leaders, Casey Moore,

Bruce Jenkins and Don Lloyd as the three staff members, Brandon Everett and Matthew Moran as staff fill ins, and Don Cook as the one alternate student.

The support staff was responsible for setup, breakdown, and support of daily field activities (both at Davis and Hill AFB) as well as supporting Maintenance needs. Three of the staff were previous GBEA graduates, and two were CDL qualified. This experience was invaluable in maintaining flexibility. They knew what was needed for each station and course, required minimal supervision and were proactive in identifying potential problems and maintaining readiness at the stations and driving courses. Three UTV's were available to the support staff from the local Forests. These were extremely useful, saving time and energy in responding to needs.

The location for the Academy was in Layton, Utah, which was the same location as 2009. The Davis Conference Center was utilized for the Classroom, ICP, and Graduation functions. Field exercises were again held at the Forest Service Retardant Tanker facility at the Hill Air Force Base. Shuttle vehicles were provided to transport the engine companies between field and classroom locations, which are located approximately 15 minutes apart.

The 24 students were housed at the Hilton Garden Inn, which is attached to the Davis Conference Center. All students, with the exception of two, doubled up on rooms to provide cost savings. Team members stayed at the Holiday Inn Express, La Quinta Inn, Hampton Inn, Fairfield Inn, Marriott Courtyard, Marriott Townplace, and the Hilton Garden Inn. All hotels are within a five-minute drive to the Davis Conference Center. Restaurants, malls, grocery stores, and theaters are plentiful and all within easy walking distance to the Davis Conference Center. Students and staff were required to provide their own meals. Water bottles were provided to the students to save costs of providing bottled water and eliminated the need to recycle hundreds of disposable plastic bottles.

Equipment and Supply support was provided by the Northern Utah Interagency Fire Cache. The cache is located in Salt Lake City and is managed by Gary Ravenberg. Expendable items and office supplies were procured through local purchases. The purchasing of local supplies was limited to a few authorized individuals. All purchases were recorded on a ledger spreadsheet and individually identified by a sequenced numbering system. A copy of each receipt is located in a Receipt folder within the Finance file box.

Preparation was slowed during "0" Week due to a lack of supplies, delayed from the Cache for two days due to the local forest conducting prescribed burns. This particularly affected pump testing due to a shortage of folding tanks and pressure testers. A snap tank was located on an engine and one pressure tester was provided from the Cache to start testing but progress was slower than ideal. A second pressure tester would have increased productivity.

Week 1 encountered a storm on Wednesday and Thursday, which created many logistical challenges. The schedule was altered on Monday to move previously scheduled outdoor activities for Wednesday to Tuesday. Wednesday was rescheduled for all indoor activities. The Preventative Maintenance class was initially scheduled for outside. No indoor facility was available at Hill, so a large room was rented from the Davis Convention Center for \$150.00.

On Monday of Week 2, a raccoon shorted out the electrical system for the entrance gate at the Tanker Base stranding the engines inside the compound. Six engines were scheduled to be at the Davis Conference Center that morning which required students and instructors to travel to the Tanker Base, delaying the afternoon activities by 15 minutes. A manual gate does exist to exit the compound, but

engines could not return through that gate. The electrical gate was repaired by early afternoon. The internet services failed at ICP until early afternoon slowing production for the morning.

On Tuesday of Week 2, the students and coaches drove six engines on the off-road course east of Centerville. In an effort to reduce the amount of dirt and mud deposited onto the Tanker Base tarmac, the engines were sprayed down using commercial wash bays located at a Maverick gas station on their way back to the base.

The total Supply expenditures were approximately \$10,980. The itemized list of purchases is located in the appendix.

Finance

The budget was based on meeting room costs, travel & per diem, supplies, overtime, and mileage. The 2010 academy cost \$131,350, and each student was charged \$2,400. The tuition paid for all the travel and per diem for the team members during the dates of April 19 – May 8, 2010. Travel and per diem costs were higher this year due to additional team members. Several team members were transitioning out and training the replacements. Mileage was less due to lower mileage rates. Approved overtime hours were increased this year to 45 and 25 hours depending on positions. This helped prevent maxing out of credit hours and is more true to actual overtime worked. Therefore, the increase of overtime costs.

The following table demonstrates the cost break down for our 2010 Academy.

	Travel/ Per Diem	Purchases	Overtime	Mileage	Totals
2008 GBEA	\$59,700	\$13,300	\$37,300	\$15,300	\$125,600
2009 GBEA	\$46,400	\$17,600	\$37,500	\$30,000	\$131,500
2010 GBEA	\$57,510	\$10,980	\$41,270	\$21,590	\$131,350

Operations

The 2010 Engine Academy Operations Section consisted of both a “field” and “planning” operations. Coaching, Driving, Pumping, and Maintenance Units all worked under operations. Coaches were assigned under different units as needed.

The Field Operations Section consisted of two returning team members, Jerry Strebel as the Field Operations Section Chief and Todd DeMasters, an Engine Academy Graduate as the Field Operations Section Chief shadow. The field operations section was able to implement changes from the prior year due to having connectivity from one year to another. Due to the flexibility of the operations organization as a whole, the overall academy was successfully coordinated and implemented.

This Operations Section was involved in implementing and refining the daily schedule, support of equipment needed to facilitate station success, coordination of activities to ensure adherence to the daily schedule, and to implement any changes. The operations staff also reviewed the IAP, attended planning meetings to implement equipment movements, and identified specific academy needs. As with the two previous engine academies, there were a few obstacles that popped up and had to be overcome (Weather, mechanical failure and specific station equipment needs).

This year planning daily activities proved to be very challenging. Inclement weather affected week one of the academy to the point of completely rearranging planned events. Outside skills days had to be switched with indoor planned events due to rain and snow issues. This in turn tested the capabilities and flexibility of the planning and logistic sections. The master schedule was modified to accommodate necessary changes needed to make the academy function without fault. The engine matrix schedule was also tailored to encompass the new changes. This move affected the maintenance and support staff in how they planned for engine movement and skills activities. The scheduled PM check station, which consisted of six trucks, was moved from the DCC parking lot to the indoor EXPO center at the DCC due to poor weather conditions.

A new Wildland Urban Interface (WUI) station was added to the driving skills day activities this year. This was based on student evaluations and team input. Students were shuttled to an off base location where they completed interface operations, which included residential initial attack training, driving techniques, and structure triage evaluations. Three members from Layton City Fire Department aided in training and evaluation of student techniques related to structure protection exercises. This station proved to be an enormous success according to student feedback. Being the first year for this station, lessons were learned on how to improve the learning environment for future academy students.

The Planning Operations Section consisted of, Allan Hepworth, as the Planning Operations Section Chief and Mike Spilde, an Engine Academy Graduate as the Operations Section Chief shadow.

The Planning Operations Section Chief is key to keeping track of lessons learned during the academy. This year approximately fifty items were identified and proposed to make changes to next year's academy. This shows the dedication and professionalism of all cadre members to try to make the academy a place for students to come and learn proper techniques related to engine operations. Students are then instructed to pass on the knowledge they have gained to other personnel on their home units.

A major component of the planning operations time is spent working on the daily schedules of all field and operational skills days. Unplanned natural events are to be expected from year to year. From a planning operations aspect the academy was a success based on the fact of needed flexibility and determination from all section units.

Coaching

In 2010, there were six coaches and one coach lead assigned to the academy. The coaches were assigned to a company of four students to mentor and support throughout the academy and were given skill stations to instruct. The coach lead oversaw the coaches, helped support the coaches with their field exercises, acted as a liaison between the command and general staff and the coaching unit, and was given field stations to instruct. There were three returning coaches from 2009 team and three new coaches that were graduates from the 2008 and 2009 Engine Academies. The coaching group encountered a few bumps in the road at the beginning due to unfamiliarity by the new coaches in their new roles but they adapted quickly and things ran very smoothly.

- Prior to the academy, the coaches were tasked with the contacting of the students to inform them of their acceptance to the academy and to have them prepared with all the necessary equipment, information, and mental attitude to have the opportunity to succeed upon their arrival.
- During week "0", the coaches assisted the other units by helping set up the driving courses, pump testing, and inspecting the engines at the initial check in, and in refining the schedules for the academy.

- On the first day of Academy, the coaching unit organized and conducted a team building icebreaker exercise with each of the engine companies. During the Academy, the coach's focuses was to mentor, coach, and instruct the students. They made themselves available at all times to accomplish this and met with the companies at least twice daily covering a variety of topics which included reviewing tests and quizzes. Coaches wrote a daily report for their company and shared it with the coach lead. The report described the student's progress, attitude, and leadership skills, which the lead shared in the nightly AAR. This unit also oversaw the portable pump troubleshooting, mobile attack, and airbrake field stations. The coaches helped the driving unit introduce the dogleg, evasive maneuvers, and i-zone driving courses and oversaw after hour practice sessions including a six-hour session on Sunday. Coaches also fill in where needed on field days, testing days, and preparing courses and vehicles for those days.
- The coaching unit met with the C & G at the end of the academy to evaluate each student in the areas mentioned above and recommend whether a student should be invited back to fill a position in the teams organization the following year.

Driving

The Driving Unit was staffed with three personnel this year. We implemented and tested for the Dog Leg, I-Zone, Evasive Maneuvers, and the Cross Country /Off-Road courses for both the Type VI and Type IV engines.

The Dogleg is an intense serpentine driving course that incorporates both skills in forward driving and backing. It is typically the most complicated course that challenges the students the most out of all the driving they encounter at the Academy. This year two students did not pass the Type 6 dogleg and will be invited back in 2011 to practice and retake the dogleg driving test.

The I-Zone is a backing exercise that improves and sharpens skills used in alley docking and maneuvering engines in tight locations. The 2010 engine academy was the first year it was scored. There was one student in a Type 6 Company that needed to re-take the test and all students passed.

The Evasive Manuvers Course is a emergency avoidance maneuver and vehicle control development course that helps operators practice and master sound defensive driving skills. This skill simulates an obstacle that moves into the path of a vehicle, and allows the driver to make safe and controlled maneuvers.

The Cross Country and Off Road Courses are accomplished during the same drive. The Cross Country portion of this course travels through urban areas of Layton, Kaysville, Farmington, and Centerville. The Off-Road Course is located above the community of Centerville. During the Cross Country portion, the coach is riding with each student, reviewing their driving abilities compared to academy approved driving checklist. Each student is evaluated on items such as reading all posted road signs, bridge height limits, following distances, driving in school zone's, following posted speed limits, etc.

The Off-Road portion is a pre-established course designed to give the students the needed driving and decision-making skills in off-road driving. This course includes a hill climb, side hill driving, Go or No Go and a blind backing exercise. These maneuvers teach each student the skills to be able to drive the engine in a safe manner on uneven terrain and have a better understanding of the vehicles limitations. All these skills have been tested by academy personnel and have been proven to be valuable in Off-Road Driving.

The final section of the course is highway and interstate driving, which teaches and allows each student to practice the needed defensive driving, driving safety in urban areas and high-speed highway and interstate driving.

The 2010 engine academy students started the with a lower skill level than the students in the previous two academies. However, they made vast improvements over the two-week period in all elements, with the greatest improvement in their ability to back. They were very willing to be coached in driving, take advice from their coaches, and put in the time necessary to improve their driving skills. As a result of their extra effort and diligence they became safer more efficient engine drivers.

Pumping

The Pumping Unit was staffed this year with James Brown, Cody McFarland, and Mike Watson. Tom Schultz, was available to assist with pumping and drafting field activities during the second week of the academy. During 0 week, with significant help from the Support Staff, Maintenance Unit, and Coaching staff, the Pumping Unit personnel were able to perform pump performance testing on 22 engines, setup field activity stations, and complete class preparation. During the academy, the subjects that were covered during classroom setting were, pump theory, hydraulics, portable pumps, and foam. All classroom curriculums were presented thoroughly by instructors and easily understood by students, which the test scores verified. A pumping representative was present during the mid-term and final exams to answer any questions by students and to assist in grading. Quizzes were successfully administered for pump theory and field pumping, and a practical test on proper drafting procedures was administered individually for each student.

Subjects covered during field portions included portable pumps, series and parallel hose lays, proper drafting techniques, mobile attack, foam, hydrant use, and ejectors. Special thanks go out to all the Coaches and the Support staff that were involved. Without this extra help and knowledge, the pumping staff would have never accomplished their objectives. Evening study sessions were held nightly for Hydraulics during week 1 and Field Pumping/Drafting week 2.

As mentioned last year, in future Academy's, the pumping group may not have to teach basic hydraulics or portable pumps. This is information that students should have from S-211, Portable Pumps and Water Use. The curriculum was changed a few years ago and is now required to teach basic hydraulics. Consequently, it is proposed that the Engine Academy change the pumping curriculum from basic information to real world, hands on practical teaching. (i.e. large complex hose lays that would have multiple ways of completing and incorporate multiple pumps with series and parallel hose lays) It is proposed that students are evaluated in their 2011 prework on hydraulic skills and knowledge prior to entering the academy and the change in curriculum by the 2012 Engine Academy.

Maintenance

April 19, 2010, was the beginning of week zero of the 2010 Great Basin Engine Academy. Both Type 4 and Type 6 Engines started arriving that day. By 1800 hour, all Type 6 and all but three Type 4 Engines had arrived at Hill Air Force Base. The three remaining Type 4 Engines arrived on April 21, due to prescribed fire activity on the local Forest.

A total of twelve Type 4 and twelve Type 6 Engines were be used for the Academy. Initial check in and inspections of all Engines and Company support vehicles began April 19. Initial inspections found the majority of all vehicles in good condition and working order.

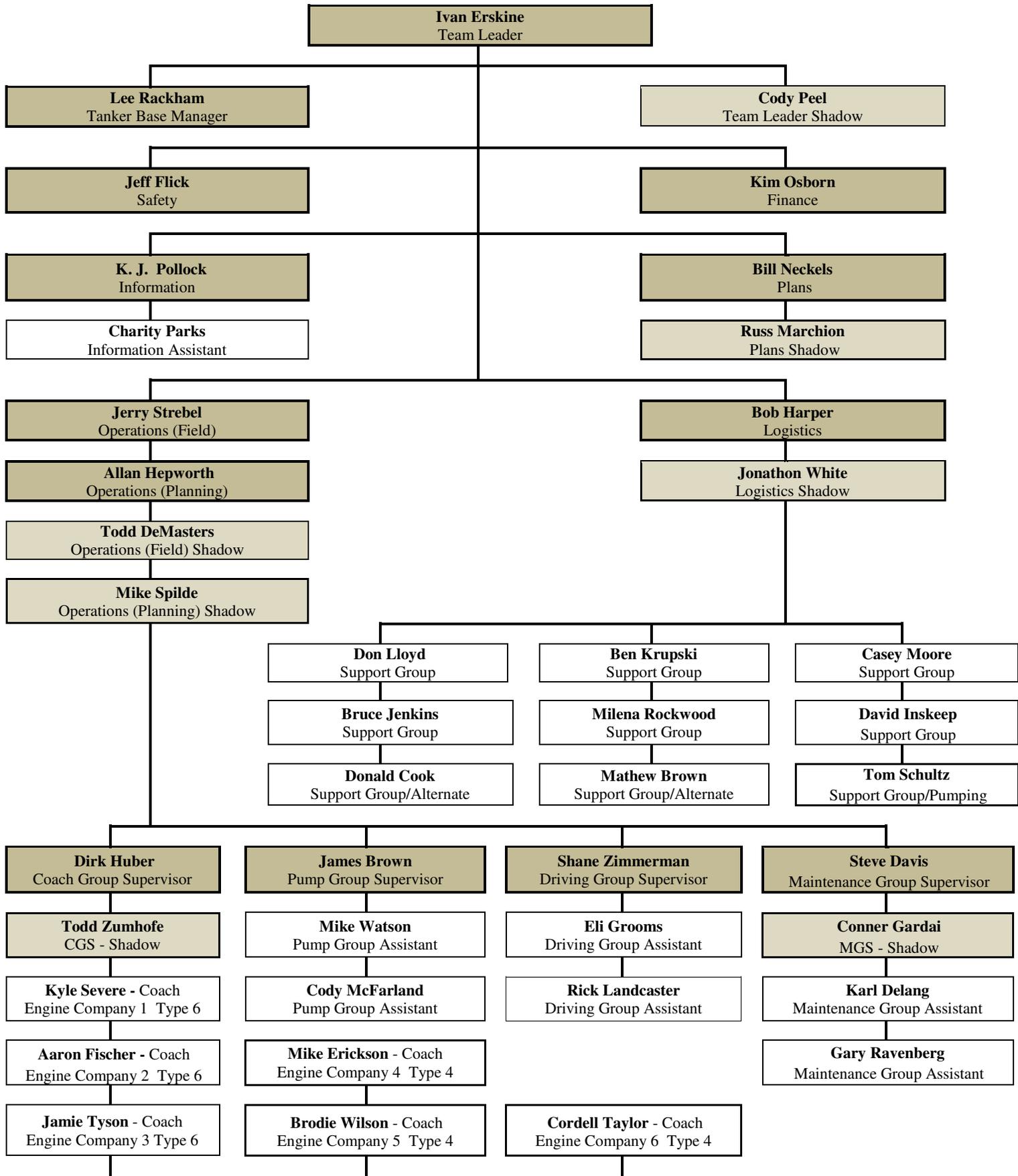
Initial check in of Type 4 Engines resulted in two needing work at Seagull Truck Repair. One Type 4 engine developed a starting problem late in the academy and was assessed by Lakecity International. The engine was found to have a fuel injection problem and was towed to Lakecity for repair on May 11, 2010.

Initial check in of Type 6 engines resulted in none needing to go to a repair shop, however two days into the academy a Type 6 engine was taken to Westland Ford and had three Fuel Injectors replaced. The same vehicle developed a coolant bypass leak it was also repaired by Westland Ford.

Minor repair and replacement of parts was completed by Academy Maintenance personal, which consisted of pump apparatus plumbing leaks, tank leaks, throttle cables, primer malfunctions, wiring issues and pump motor service. Minor engine repair and replacement of parts consisted of air filter replacement, wiring issues, battery maintenance, spare tire modification, and several engines and support vehicles being taken in for oil changes and service or tire rotation.

The engines used in the 2010 GBEA, arrived at Hill Air Force Base better-maintained and were in much improved condition than in two previous academies. Perhaps slower fire seasons and newer fleet are some of the reasons for the improvements in engine condition. The maintenance group also feels that the Great Basin Engine Academy has definitely had a positive influence on engine and pump maintenance improvement due to better trained and more knowledgeable Region 4 engine personnel.

Appendix A: Great Basin Engine Academy Organization April 26, 2009



Appendix B: 2010 Engine Companies

Great Basin Engine Academy
 Engine Companies
 2010

Engine Company 1 Type 6	POS	M/F	Agency
Robert Gutierrez	CPT	M	MLF
Sean Carey	ENG	M	BTF
Blake Merrill	ENG	M	CTF
Justin Larsen	ENG	M	FIF
Coach: Kyle Severe			

Engine Company 4 Type 4	POS	M/F	Agency
Morgan Whiting	SFF	M	ASF
Michael Green	LEAD	M	BOF
Paul Roose	CPT	M	BTF
Lance Jorg	ENG	M	FIF
Coach: Mike Erickson			

Engine Company 2* Type 6	POS	M/F	Agency
Ash Phelps	CPT	M	CTF
Riley Rhoades	CPT	M	SCF
Kelly Lewis	ENG	F	STF
Alan Syphus	ENG	M	BLM-AZ
Coach: Aaron Fischer			

Engine Company 5 Type 4	POS	M/F	Agency
Matthew Brown	ENG	M	HTF
Andrew Geringer	ENG	M	PAF
Mike Cahill	ENG	M	BTF
Donald Cook	LEAD	M	BOF
Coach: Brodie Wilson			

Engine Company 3 Type 6	POS	M/F	Agency
Ryan Stone	CPT	M	HTF
Nathan Basford	ENG	M	SCF
Chris McVicars	ENG	M	HTF
Jason Greenway	ENG	M	PAF
Coach: Jamie Tyson			

Engine Company 6 Type 4	POS	M/F	Agency
Brian Moran	ENG	M	UWCF
Joel Welch	ENG	M	BOF
Jonathan Miller	LEAD	M	PAF
Chad Sewell**	ENG	M	STF
Coach: Cordell Taylor			

Top Company *
 Top Student **

Appendix C: 2010 Engine Maintenance Record

2010 Great Basin Engine Academy Maintenance Engine Condition and Repair Record						
	Number	Engine Make	Forest	Condition	Repairs Completed	Repairs Needed
Type 4						
1	FS-6864	2004 International	ASF	GOOD	NONE NEEDED	NONE
2	FS-6297	2000 International	UWCF	GOOD	Tank to suction line leak, suction line to pump leak. Replaced male to female swivels to repair leaks. Replaced thottle cable.	NONE
3	FS-4220	2007 International	ASF	GOOD	Moved spare tire carrier up	NONE
4	FS-6520				Air Compressor main line bad. Oil Pan and head gasket oil leak. Truck was taken to Seagulls Truck Repair.	NONE
5	FS-4217	2007 International	UWF	GOOD	NONE NEEDED	NONE
6	FS-4218	2007 International	UWF	GOOD	Steering box loose. Air breather tube bad. Truck was taken to Seagulls Truck Repair.	NONE
7	FS-6525	2003 International	BOF	GOOD	Replaced Throttle Cable. Replaced Passanger Side reel couple hose.	NONE
8	FS-4359	2009 Freightliner	BTF	NEW	Fuses for overhead light package and siren would not carry load with everything on. Ran an additional wire with fuse to avoid overload.	NONE

	Number	Engine Make	Forest	Condition	Repairs Completed	Repairs Needed
Type 4						
9	FS-8705	2006 International	PAF	GOOD	Replaced starter solenoid. Truck would not start 5/4/10. Truck has fuel injection issue. Estimated date of repair. Repair complete 5/11/2010.	NONE
10	FS-6304	2000 International	PAF	GOOD	NONE NEEDED	NONE
11	FS-4216	2007 International	UWCF	GOOD	Moved spare tire carrier up	NONE
12	FS-4215	2007 International	UWCF	GOOD	Replaced throttle cable. Moved reel buttons.	NONE
Type 6						
1	FS-6330	2009 Ford F-550	MLF	NEW	NONE NEEDED	NONE
2	FS-4228	2008 Dodge 5500	FIF	GOOD	NONE NEEDED	NONE
3	FS-6475	2002 Ford F-550	CTF	FAIR	No control panel for pump or pressure gauge. Installed pressure gauge, pump works but did not meet required pressures for academy criteria.	
4	FS-6239	2001 Ford F-550	SCF	GOOD	NONE NEEDED	NONE
5	FS-4196	2007 Ford F-550	BTF	GOOD	NONE NEEDED	NONE
6	FS-4257	2008 Dodge 5500	BTF	GOOD	NONE NEEDED	NONE
7	FS-4229	2008 Dodge 5500	FIF	GOOD	NONE NEEDED	NONE
8	FS-4199	2007 Ford F-550	FIF	GOOD	Tightened set screw on manual transmission shift stick.	NONE

	Number	Engine Make	Forest	Condition	Repairs Completed	Repairs Needed
Type 6						
9	FS-6857	2004 Ford F-550	STF	FAIR	Replace three fuel injectors in motor. (WESTLAND FORD) bypass leak. Westland Ford completed the work.	NONE
10	FS-4451	2009 Ford F-550	STF	NEW	NONE NEEDED	NONE
11	FS-4202	2007 Ford F-550 EXT	CTF	GOOD	NONE NEEDED	Pump failed required pressure for academy standards but workes ok.

Appendix D: 2010 Engine Academy Purchases

GBEA 10- Supply Purchase Ledger (WFPR60)						
Buy#	Item	Amt	Resource Assigned	Purchaser	Date	Total Cost
10-0001	Friction Loss Calculators	50	Cascade	Bob Harper	11/23/09	\$472.50
10-0002	Copier Rental 4/24-5/08	1	Les Olsen & Co.	Bob Harper	11/23/09	\$957.80
10-0003	Nalgene Water Bottles	50	Karst Sports	Bob Harper	11/23/09	\$442.50
10-0004	Porta-Pottie Rental 4/27-5/07	3-6	The John & Co.	Bob Harper	11/23/09	\$1,947.00
10-0005	GBEA Logo Stickers	75	The Sign Center	Bob Harper	11/23/09	\$173.25
10-0006	Red Lights & Sirens Training	30 SWB	Nation Safety Council	Bob Harper	11/23/09	\$388.20
10-0007	Hand Sanitizer – 8 oz Purell	12	Amazon/Gojo	Bob Harper	12/04/09	\$64.18
10-0008	MkIII Instruction Card	30	GBK	Bob Harper	12/04/09	\$3.60
10-0009	4 1/2" Grinder	1	Sears	Steve Davis	12/11/09	\$54.49
10-0010	19.2 volt Drill	1	Sears	Steve Davis	12/11/09	\$104.49
10-0011	Drill Bits	1 set	Harbor Freight	Steve Davis	01/13/10	\$29.67
10-0012	42" Delineator Replacements	64	Safety Supply & Sign	Dirk Huber	03/11/10	\$804.31
10-0013	18" Cone Replacement	16	Uline	Bob Harper	03/11/10	\$148.49
10-0014	Masking Tape	8	Home Depot	Shane Z.	4/19/10	\$11.85
10-0015	Inspection Mirror	1	Car Quest	Bob Harper	04/21/10	\$11.28
10-0016	Replacement Magnetic Signs	3	Blip Printer	Bob Harper	03/18/10	\$22.79
10-0017	Property Tags	1000	Xpress Tags	Bob Harper	03/17/10	\$53.43
10-0018	Replacement Safety Vests	12	Northern Safety	Bob Harper	03/17/10	\$55.22
10-0019	Replacement Starter Flag	4	Northern Safety	Bob Harper	03/17/10	\$16.30
10-0020	Replacement Safety Glasses	6	Northern Safety	Bob Harper	03/17/10	\$22.22
10-0021	Disposable Ear Plugs	200	Northern Safety	Bob Harper	03/17/10	\$22.09
10-0022	White Board (Standing)	1	Biz Chair	Bob Harper	03/17/10	\$512.00
10-0023	Paper Cutter	1	Staples	Bob Harper	04/21/10	\$16.79
10-0024	Paint Pens	2	Michaels	Bob Harper	04/21/10	\$8.29
10-0025	Thumb Drives for Coaches	10	New Egg	Bob Harper	3/18/10	\$172.89
10-0026	3" Binders, Black,	30	Office Max	Bob Harper	3/18/10	\$443.70
10-0027	5-tab divider Avery 11418	30 sets	Office Max	Bob Harper	3/18/10	\$115.94
10-0028	30wt Motor Oil	3 qt	Car Quest	Bob Harper	04/20/10	\$12.87
10-0029	Power Steering Fluid	3 qt	Car Quest	Bob Harper	04/20/10	\$11.97
10-0030	Window Washer Fluid	3 gal	Car Quest	Bob Harper	04/20/10	\$7.17
10-0031	Anti Freeze Fluid	2 gal	Car Quest	Bob Harper	04/20/10	\$23.98
10-0032	Shop Towels	1 box	Car Quest	Bob Harper	04/20/10	\$12.99
10-0033	Diesel Motor Oil	3 gal	Car Quest	Bob Harper	04/20/10	\$39.97
10-0034	Assorted Fuses Kit	2	Car Quest	Bob Harper	04/20/10	\$34.06
10-0035	Diesel for UTVs	10 gal	Super Stop #5	Bob Harper	04/20/10	\$31.63
10-0036	Gasoline - Pressure Washer	10 gal	Super Stop #5	Bob Harper	04/20/10	\$15.84
10-0037	White Rustoleum Paint	4 gal	Lowes	Dirk Huber	04/13/10	\$107.52
10-0038	Teflon Roller Brushes	3	Lowes	Dirk Huber	04/13/10	\$7.97
10-0039	50" Wood Pole w/metal tip	2	Lowes	Dirk Huber	04/13/10	\$13.12
10-0040	Shor-Line	2	Lowes	Dirk Huber	04/13/10	\$29.94
10-0041	Cutoff Wheels	5	Clearfield Auto	Steve Davis	04/21/10	\$8.45
10-0042	Power Service Oil	1qt	Clearfield Auto	Steve Davis	04/21/10	\$8.32
10-0043	Action Packer Plastic Tubs	2	Sportsmans WH	Bob Harper	04/22/10	\$59.98
10-0044	RV Antifreeze	6 gal	Auto Zone	Bob Harper	04/22/10	\$29.84
10-0045	Lamination Service for Matrix	2	Ogden Blue	Bob Harper	04/22/10	\$150.00
10-0046	Printer Cartridge HP 564	2	Office Max	Bob Harper	04/26/10	\$54.60
10-0047	Printer Cartridge HP 564XL	2	Office Max	Bob Harper	04/26/10	\$55.61
10-0048	Paper Towels	6 rolls	Target	Bob Harper	04/25/10	\$8.35

10-0049	Dustpan/Brush Combo	6	Target	Bob Harper	04/25/10	\$22.14
10-0050	Squeegee	6	Target	Bob Harper	04/25/10	\$12.94
10-0051	Glass Cleaner	6	Target	Bob Harper	04/25/10	\$6.42
10-0052	AAA Batteries	4 ea	Hilton Garden Inn	Bruce Jenkins	4/25/10	\$7.00
10-0053	Gasoline	25 gals	Hill AFB WestGate	Bob Harper	4/25/10	\$76.57
10-0054	1/2" metal rod	1	Home Depot	Steve Davis	4/23/10	\$5.29
10-0055	flat black spray paint	2 cans	Home Depot	Steve Davis	4/23/10	\$1.94
10-0056	Wire Brush	1	Home Depot	Steve Davis	4/23/10	\$18.97
10-0057	3" x 2" pipe nipple	1	Home Depot	Steve Davis	4/23/10	\$3.44
10-0058	25' Tape Measure	1	Home Depot	Steve Davis	4/23/10	\$10.97
10-0059	Leatherman - Wing Com	1	Target	Bob Harper	4/26/10	\$83.06
10-0060	Leatherman - Top Student	1	Lowe's	Bob Harper	4/26/10	\$84.97
10-0061	Mag Lights - Top Company	5	Lowe's	Bob Harper	4/26/10	\$111.20
10-0062	Batteries - AA - Radios	200	Lowe's	Bob Harper	4/26/10	\$109.70
10-0063	Speed Square	1	Lowe's	Bob Harper	4/26/10	\$16.16
10-0064	4 1/2" Cutting Wheel	10	Lowe's	Bob Harper	4/26/10	\$8.97
10-0065	Regular Gasoline for UTV	20 gals	AAFES	Bob Harper	4/26/10	\$59.45
10-0066	Leatherman - Photographer	1	Target	Bob Harper	4/27/10	\$83.06
10-0067	File Boxes	6	Office Max	Bob Harper	4/27/10	\$82.93
10-0068	Replacement "C" Fold Paper	1 case	Office Max	Bob Harper	4/27/10	\$13.32
10-0069	Replacement Toilet Paper	12 pack	Office Max	Bob Harper	4/27/10	\$33.32
10-0070	Oil Dry Compound	1 bag	Lowe's	Bob Harper	4/27/10	\$13.98
10-0071	Floor Magnet	1	Lowe's	Bob Harper	4/27/10	\$15.98
10-0072	Drive Adapters - Socket Sets	1 set	Lowe's	Bob Harper	4/27/10	\$17.90
10-0073	Punch & Chisel Set	1	Cal Stores	Steve Davis	4/27/10	\$26.99
10-0074	Polyseam Seal	1	Cal Stores	Steve Davis	4/27/10	\$3.49
10-0075	1/2" Drive Flex Handle	1	Cal Stores	Steve Davis	4/27/10	\$28.99
10-0076	1/2" Drive 10" Extension	1	Cal Stores	Steve Davis	4/27/10	\$9.99
10-0077	4 1/2" Fast Cut off Wheel	10	Cal Stores	Steve Davis	4/27/10	\$19.90
10-0078	1/2" to 3/8" Socket Adapter	1	Cal Stores	Steve Davis	4/27/10	\$5.99
10-0079	1/2" Drive 2 1/2" extension	1	Cal Stores	Steve Davis	4/27/10	\$7.99
10-0080	3/8" Drive 2 1/2" extension	1	Cal Stores	Steve Davis	4/27/10	\$3.99
10-0081	Grinding wheel	3	Cal Stores	Steve Davis	4/27/10	\$5.97
10-0082	2" dbl threaded outlet bung	1	Cal Stores	Steve Davis	4/27/10	\$6.59
10-0083	3" Wade HL GasKet	1	Cal Stores	Steve Davis	4/27/10	\$3.49
10-0084	Replacement Flash Drives	10	New Egg	Bob Harper	4/28/10	\$285.78
10-0085	Tire Pressure Gauges - Duals	10	Car Quest	Bob Harper	4/28/10	\$229.60
10-0086	RV Anti-Freeze	2 gals	Car Quest	Bob Harper	4/28/10	\$12.72
10-0087	"Vehicles on Premises" fee	6 veh	DCC	Bob Harper	4/28/10	\$150.00
10-0088	Additional Flash Drives	6	New Egg	Bob Harper	4/30/10	\$177.63
10-0089	Step Drill Bit	1	Lowe's	Bob Harper	5/01/10	\$36.97
10-0090	Replace Friction/Loss Cal	40	Cascade Fire	Bob Harper	5/03/10	\$427.38
10-0091	AAA Batteries	10	Lowe's	Bob Harper	05/03/10	\$5.97
10-0092	D Batteries	8	Lowe's	Bob Harper	05/03/10	\$12.94
10-0093	Hose Saw	1	Lowe's	Bob Harper	05/03/10	\$12.98
10-0094	Presentation Gift Engraving	8	Trophies Inc	Bob Harper	05/03/10	\$56.00
10-0095	Battery Charger	1	NAPA	Steve Davis	05/04/10	\$159.00
10-0096	Vise	1	Lowe's	Steve Davis	05/04/10	\$79.98
10-0097	Extension Cord	1	Lowe's	Steve Davis	05/04/10	\$34.96
10-0098	Engine Wash Off Road	6	Patriot Car Wash	Bob Harper	05/04/10	\$10.00
10-0099	Heet Gas Treatment - Water	3	Car Quest	Bob Harper	05/05/10	\$8.91
10-0100	Pressure Washer Tire Repair	1	Les Schwab	Bob Harper	05/06/10	\$16.37

10-0101	GBEA Pictures 4 x 6	61	FedEx Office	Bob Harper	05/07/10	\$17.69
10-0102	Presentation DVD's	74	AMS	Bob Harper	05/07/10	\$138.96
10-0103	Presentation Belt Buckles		Woodland Enter	Bob Harper	05/03/2010	\$282.95
Total supply expenditure for the 2010 Academy						\$10,979.30

Appendix E: 2010 Engine Academy Lessons Learned

Great Basin Engine Academy Lesson Learned April 26 – May 7, 2010

1. One person assigned to making sure all engines are arranged and confirmed for academy.
2. Make sure pumps are full of gas before they come to the academy.
3. Make sure all support trucks are fueled and serviced before they arrive.
4. Review question #10 on Pretest 2. Deals w/ slack adjusters for air brakes. Is this question applicable to Type 6 students?
5. Projector - vents hot air; do not put anything next to it. (like another projector or computer)
6. See if an auto instructor can cover verse Dodge/Ford Rep.
7. Planning - Reminder- On main schedule (2010) we moved Tues April 27 to Wed April 28.
8. Also combined dogleg morning and checkout afternoon for all companies - see how this flows
9. Have one hanger door closed before we arrive. (weather issues)
10. Coaches - Coordinate with the students for the check out drive. (Zumhofs)
11. Planning - create a block on the matrix for (1 Type 6 ford & 1 Type 6 dodge) Ford and Dodge Reps
12. Pretest #2 given first thing Monday and grade during cohesion exercise and then give back to students.
13. Have multiple tests available (pretest #2); change pretest on website.
14. Do the students need to be wearing uniforms on Sunday at check in?
15. P. M. - Need safety glasses in class - hard to see with sunglasses.
16. Do we need the scoring sheet in the student binder?
17. Possibility of making Pretest #1 weighted 0% and have pretest #2 weighted 3%.
18. Flow meter needs to have WD-40 in it after every use and left standing upright overnight. (Watson to make reminder sheet to keep with it)
19. Planning - Upon vehicle arrival Day 1 Week 0: support needs to fill out 100% of the inspection form; i.e. home unit, door # and GBEA mileage.
20. Planning - Maintenance will do the prelim pump checks before hands off to pumping unit; i.e. fill tank (test 300 psi), start pump, no leaks
21. Skills days - add 10 min briefing time after travel to HAFB for station orientation.
22. Planning - For Saturday optional activities (1615-1815) add pumping and I-zone as activities.
23. Thursday pump station change, No flow meter - add small pump
24. No writing on friction loss calculator; will post equations on board
25. Only need one folda-tank for both series/parallel and hydrants and put it at hydrant station. (Friday Field Pump Skills Day)- Melina
26. Pumping - Hand out drafting Script the night before
27. WUI on the wrong day - would also have to change classroom portion
28. WUI day – give each student evaluation form to triage each structure and then review with instructors
29. More people need to be able to print - VPN Issue?
30. Do we need air brakes on Wed Week 2 “already done in the class and field on Monday”
31. All power points need to be printed and given ahead of presentation, which will give each student something to make notes on and study from.
32. RLS presentation - need to cover all questions on test in classroom portion that is in the unit prior to taking the test. If we need more class time, schedule it!
33. Look at who is briefing students on driving day and get the same briefing in AM briefing.
34. Laminate pumping/drafting script and handout night before

35. Driving skills day - have groups A & B rotate and C & D rotate then switch at lunch. This would be less shuttle time.
36. Add I-zone and Dogleg scoring criteria to the student binder.
37. Finance - Reduce OT on week 0.
38. WUI truck needs to be filled with H₂O at lunchtime.
39. WUI station needs – 200 ft of 1 1/2 hose & one pig tail
40. Zimmerman - No 2007 Type 6 trucks to run on the I-zone course
41. Planning - On schedule add 10 minute briefing time for station orientation
42. Foot Gate Issues - Do we need to get out own lock with limited # of keys?
43. Walkup test - have at DCC during study hall
44. Driving/Pumping - create a simple cheat sheet for all rules and times for all stations...for all team members that may be asked questions by students to ensure all info is correct.
45. Scoring protocol- look at!
46. Pretest #1 that is sent to all nominees - make it a timed test administered by supervisor and change it from previous years. Definitely should measure how well the nominee understands hydraulics.
47. Evaluations with student pictures to coaches first day
48. Plan better for Thursday student evening evaluation . Coaches-pumping-driving – have all evaluations completed by Thursday morning and given to plans in preparation for that evening.
49. Think it would be beneficial for coaches-pumping-driving to turn in an improved evaluation for the academy - ideas and concepts
50. GET PIZZA EARLIER ON THURSDAY EVALUATION NIGHT!
51. Thursday HAFB test day - have computer at Hill for grading averages for all students (i.e. student retakes, 80% average issue)
52. Thursday test - have the students take the final exam during study hall
53. Have students perform PM test during study hall hours @ Hill
54. Work on inconsistencies with information that is given to students.
55. Tell home units to only send the required amount of inventory on engines.
56. Ability for the coaches to spend more time with their students and not shag cones.
57. On last day (Friday) have a list of who is driving home what vehicles.
58. Work on getting new engines from other Forests - we want the best forest engines. We do not want engines that sit on the line and never get used because of maintenance issues.
59. Need bigger ICP! Need room for 30 people and work space.