

NBAA Aviation Maintenance Committee Professional Development White Paper

An initiative offered by the NBAA Training/Advanced Education Sub-committee

Prelude:

In October 1999, the NBAA Maintenance Committee met during the 52nd Annual Meeting & Convention and formed the Training Subcommittee to work with industry. The purpose was to identify and provide the necessary changes that address the evolving needs of aircraft maintenance. The first Chairman of the NBAA Maintenance Committee was James West. NBAA bylaws allow the Chairman to serve for two years. Historically, the next Chairman of the Maintenance Committee was Len Beauchemin. The third Chairman for the Maintenance Committee was Bill McBride. Jim Janaitis now currently serves as the Chairman of the NBAA Maintenance Committee.

Following the October 99' NBAA internal meeting the newly formed NBAA Maintenance Training subcommittee (Chair: Jim Janaitis) met with identified representatives (February of 2000) from all aircraft manufacturers and training providers to openly discuss the status of maintenance training. This effort has been received in a positive manner, with the training initiative accepted and openly embraced.

The Training Subcommittee defined a new curriculum for maintenance training (NBAA Training Guidelines) so that initial and recurrent instruction of technicians could meet the critical day-to-day needs of business aircraft operators. To help convince training organizations of the need to reorient their courses to better meet training needs, the Training Subcommittee surveyed the NBAA Membership on a variety of training issues.

The first work of the Training subcommittee is available for viewing on the NBAA website. It is entitled the "NBAA Maintenance Training Guidelines". Also available on the website is a "Maintenance Training Checklist". A wealth of other information concerning the Maintenance Committee, historical and contemporary, is available for viewing at the NBAA website.

At the upcoming 58th Annual NBAA National Convention in Orlando, 2005, the Training subcommittee, will share a presentation venue. This presentation will address the actions that the Training providers took in response to the Training subcommittee initial findings. They will report their positive changes with reference to the new NBAA Training Guidelines. The NBAA Maintenance Training subcommittee and the Training providers will also work to finalize an ongoing feedback mechanism in the training industry that facilitates a narrow divide between training expectations and delivery of maintenance training results.

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Prelude continued:

Building on this strong legacy of active involvement, partnership, standard setting and stewardship for the Business Aviation Maintenance community, the Training Subcommittee (now titled Training/Advanced Education Subcommittee) looks forward again. This time with more focus on what was defined in several categories of the initial work done in 1999.

Three concepts from the original work stand out to the committee: the “60 minute troubleshooting window”, “the save” and how to address the training needs of the ever changing, complex and diverse technology advances coming down the pipeline. A fourth concept discussed for the first time, articulates not so much what the training providers do with their methods and curriculum to address these needs. Instead, the concept focuses on the individual careers of the technicians and their professional growth.

Exploring the above mentioned four concepts in scores of sessions over this last year of 2004-2005 delivered nothing less than a ground breaking initiative offered up in the ensuing pages of this paper. So bold yet simply logical an undertaking, that from the NBAA strategic perspective it can only be offered as a vision of the future. That is one of the primary roles of the NBAA, to set standards. That is the legacy of the first work of the Training subcommittee, the creation of Training Guidelines and a Training checklist with a feedback mechanism.

Standing on the shoulders of those of the first Training subcommittee, we ask the rest of the industry to join in the creation of a brand new professional career from a respected and venerable trade. This professional career path has potential to meet the needs of the aviation maintenance community for generations to come. One that accounts for new growth to match whatever pace the industry throws at it. To understand clearly what level of partnership is required and the heavy lifting that can't be accomplished by the NBAA alone, stop for a few minutes and contemplate the project name given to this partnership, “*Project Bootstrap*”.

The Training/Advanced Education subcommittee is asking the technicians much like the Wright Brothers asked Charles Taylor to do something that hadn't been done before. Much n like the Wright brothers asked “Charley” to build it with so much horsepower and so much weight we, Industry and NBAA Training/Advanced Education subcommittee need to partner and work together, to frame the expectation for the technicians pulling themselves up to the task.

The NBAA Maintenance Committee has formed the vision thus the resources of the NBAA need not be expended to a great degree. The volunteers of the NBAA Maintenance Training/Advanced Education subcommittee dedicate themselves through their heartfelt passion and intuition through this paper to guiding stakeholders (many listed in paper) in the principle points of the paper for the successful and professional growth of the technicians.

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Professional Development “Call to Action”

When you really boil it down, the underlying mission of the aircraft mechanic hasn't changed much over the last 100 years. Quite simply, Orville and Wilbur Wright relied on Charles “Charley” Taylor (the undisputed forefather of all aviation mechanics) to design, fabricate the first aircraft engine and to maintain the integrity of their mechanical device. They needed him to anticipate and prevent deficiencies that would hinder proper operation and perform repair when components unexpectedly failed. The Wrights utterly depended on Taylor to run their core business in Dayton, Ohio while they were in Kitty Hawk, NC. The bicycle shop business funded the flight tests that produced the world's first powered flight in 1903. Taylor was the fulcrum of stability when the brothers took divergent design path opinions, acting to return the brothers to harmony. Truthfully, do we ask any more of the aviation technician of today? We, the NBAA Maintenance Training/Advanced Education committee don't think so.

Over the next 70 years, aircraft transitioned from wood and fabric frames driven by bicycle chains to round-head rivets and snub-nosed fortresses and beyond. Jet engines, streamlined fuselages and glass cockpit innovations have exponentially catapulted aviation technology today well beyond what was only in science fiction novels and comic books 30 years ago. Has the aviation technician of today stayed true to the calling of Charley Taylor? They have! Have we recognized their phenomenal transition and technology-paced accomplishments? Have we evolved their career growth path to stimulate the young high school graduates looking for a place to start and advance through life? **We have not!**

While the majority of our current workforce of aviation maintenance professionals remains in the aviation industry, the automotive and other technology-driven industries continue to lure away many of our brightest stars of today and tomorrow. Why? Because the curriculum and educational standards that our industry has inspired, developed and maintained has been recognized as creating intuitive, innovative, and forward-thinking professionals. In addition, as the number of advanced technology-based industries grows, the bleeding continues. Complicating the issue, the drop out rate in aviation-related secondary schools is alarming, and of those that finish a less than satisfactory percentage of A & P school graduates end up in the field of aviation. Have we allowed this to happen? We're afraid so. Are we finally going to do something about it? You're damn right we are!

Your NBAA Aviation Maintenance Committee is inviting its members, affiliates, and interested aviation organizations to a Professional Development “Call to Action!” We are proud to announce **Project Bootstrap** as a path to provide for the advancement of today's aviation technician fostered by *grass roots industry support*.

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“Call to Action” continued:

Our short term goal is to honor and promote the existing path of advancement, recognition and industry certification to inspire immediate pride in the technicians of today and encourage the pursuit of this honorable and rewarding career path to the technicians of tomorrow.

Our long term goal is to create an appropriate and merited path of professional and technical advancement that parallels the current and future technology explosion, including the creation of an internationally recognized rating that merges airframe, power plant, avionics, and electrical skills.

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Leading Particulars of Paper

NBAA Maintenance Subcommittee Training/Advanced Education Charter

Acting on behalf of Business Aviation Technicians nationwide it becomes the responsibility of this subcommittee under the auspices of the NBAA to capture the vision for the advancement of knowledge and professionalism in our industry and to lead change.

To accomplish this we commit ourselves to a long term partnership with educational/training institutions and industry, keeping our eyes and hearts firmly placed on gaining personal and professional advancement for the technician. The advancement of technician will be the primary goal.

NBAA Maintenance Subcommittee Training/Advanced Education Vision

Inspire a *national effort*, raising the educational and professional bar for all aviation technicians through the creation of a new and higher certificated category. The contemporary certification is to be granted by a professional aviation industry coalition with a long term goal of FAA certification.

“AMTE”

(Aviation Maintenance Technical Engineer)

Combining the A&P, IA and Avionics skill sets with a required ten year contiguous experience history composed of any combination of years of service in any rated capacity following the award of all certificates, licenses and ratings. Currently the qualification for Avionics technician’s industry certification would be the FCC (Federal Communications Commission) GROL (General Radiotelephone Operators License). In the near future that qualification will be enhanced by an FAA certificated Avionics rating. If a technician held or attained an FCC GROL that would remain as is, distinct to the privileges of the FCC license in the FCC CFR (Code of Federal Regulation) Part 47 rules i.e. 91’s, 135’s or 145’s working on transmitters up to 250 watts or 1000 watts PEP (peak envelope power). With regard to aviation, return to service privileges already granted to the A&P technician and additional certification privileges granted to the qualified FAA Avionics technician would remain distinct to CFR 14 subpart rules.

Project Bootstrap

The most critical dynamic is the industry partnership that must be the driver for appropriate changes to be manifested.

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Why “AMTE” for the title of the advanced role?

What’s in a name? Titles for career positions in this country are as complex and hard fought as the positions they represent. The main drivers can be class distinction or professionalism. By expanding and building our role in aviation maintenance to provide a broader diversity among all of the disciplines, we will provide more value. We firmly believe that we are standing on a solid foundation of professional development that deserves a stronger and higher title.

Part of the drama surrounding the failed regulatory change in the late 90’s called NPRM (notice of proposed rulemaking) Part 66 involved among other things, the issue of the new name for the A&P Mechanic. Some in the industry voiced their opinion that merely changing the name from mechanic to technician would raise the level of respect for all who practiced the craft. This was an effort based in class distinction, driving the name change split the group being addressed because some preferred the term mechanic and wore it with pride while others had a disdain for the term mechanic and thought technician sounded more professional. It still ruffles feathers along age lines in the industry. When we evolve our profession (AMTE), the change that occurs will be worn proudly and not argued over.

Switching our attention to the other skill set history, electrical and avionics professionals were always termed technicians because they worked on electrical and electronic devices just as other technicians in other industries, so there was an extant traditional standard followed. Technicians work in a broad range of industries and typically attend a two year technical college or trade school similar to the academic path of an A&P mechanic but more mathematics based. Technicians employed in design laboratories are usually entitled engineering technicians, engineering technologists or technical engineers.

The original aircraft mechanic professional, Charley Taylor, liked to be called a “mechanician”, a term that fit the role he defined while engineering, designing and literally carving out the first aircraft engine on a fourteen inch lathe. Later, the professionals who followed his model called themselves aviation mechanics. The first formal certification title for these aircraft professionals granted by the newly formed CAA (Civil Aeronautics Administration) was “A & E”, which stood for Aircraft and Engine mechanic. This title certification was later adapted to A&P (Airframe and Power plant) mechanic in 1958, by the new regulatory governmental group called the FAA (Federal Aviation Administration). Then in the late 1990’s the certification title was changed to AMT (Aviation Maintenance Technician). This was the change that created internal tension in the industry. Without a clear mandate, this change in title was made viscerally and the books remain unedited. Today, constituents have warmed to the title a little.

The title of Technical Engineer matches the role that the Avionics Technicians exercise. The training discipline over two years covers most of

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Why “AMTE” continued:

four year elements in an BS/EE (Electrical Engineering) program except the liberal arts and soft skills elements. The EE degree program differentiates from the TE program in math and physics categories for the most part. Aviation Maintenance position titles should not stray into the full “engineering” title arena without adhering to traditional educational standards for engineering certification. Many nationally recognized universities are, however, offering 4 year, B.S. Engineering Technology programs. Following time honored principles, if we give respect to other industries we’ll get it back in return.

There are numerous new position titles being proposed once again, as contemporary efforts to enhance the role of the aircraft mechanic are manifested. Most of these efforts focus in the area of recognition by achievement of milestones in training and experience. A few of the larger programs are listed below.

➤ PAMA (Professional Aviation maintenance Association) Recognition Program

A recognition program for PAMA members who are A&P and Avionics technicians that has seven levels of growth with different training and experience requirements. There are no future regulatory requirements in this recognition program.

➤ PAMA endorsed FAA written: FAA Part 1, 43 and 91 Phase I and Phase II NPRM proposal

Phase I consists of needed incremental improvements not related to this paper for A&P/IA’s.

Phase II is not recommended for action at this time by the proposal itself, but it is important because of what it contains. It allows for the Avionics technician certification to be granted from the FAA. Currently the FCC issues a GROL that defines by association an Avionics technician, even though there is no direct correlation by licensure privilege. This has always been confusing and non-linear licensure for the Avionics technicians. The GROL is fairly new in FCC parlance. It used to be the First or Second Class FCC license with a radar endorsement. The FCC went through a downsizing exercise in the late 80’s and simplified the tests and licensure. The recommended training requirement for the FAA Avionics technician in this draft NPRM proposal is 400 hours. This is approximately 1600 hours short of traditional Avionics technician training.

Another aspect of Phase II strategic planning is the addition of an iconic role, i.e. pursuing and attaining a college degree in any non-related field can qualify for a position called the AME (Aviation Maintenance Engineer). It is the Training/AE subcommittee position that titles should reflect vetted degree programs as explained earlier in the title section.

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Why “AMTE” continued:

- AMS (Aviation Maintenance Society) Certification Program
Who have proposed and implemented a non-profit entity that recognizes and certifies AMT's (Aviation Maintenance Technicians), Avionics technicians and Repair Specialists to different levels in a matrix relative to training achievements and experience achievements. When one achieves the highest level of certification in AMS by earning credits following an academic model program they are entitled, AMET (Aviation Maintenance Engineering Technician).
- FAA AMT Award Program remains a very successful albeit simple recognition and rewards program. Since the awards are granted by the FAA itself after recurring annual achievement steps by the technician, it takes on a formal and professional feel because these awards are granted by the certifying agency. The top level is called the FAA Diamond Award.
- FAA “Charles Taylor” award program is a lifetime achievement award given to the dedicated professional whose active tenure in aviation maintenance equals fifty years. This is the current “Gold” standard for achievement in the industry. One needs only to see an individual receive one of these to sense the common pride that washes over the audience.
- There are numerous other awards, recognition and accreditation programs that drive titles not included in this paper for the sake of brevity. Also not mentioned, but familiar to many, are the degree program titles that institutions like Embry-Riddle, Purdue University, Eastern New Mexico University and others offer.
- The NBAA Vision Plan is the only one that will require major additional skill sets combined with a large experience element (ten years) designed to cover more of the aircraft maintained than ever before. As the skill, knowledge, academic and experience level of the AMT builds to the AMT/IA then AMT/IA/Avionics level, we truly have achieved a career path that models other professions such as pilot, medical, legal, academic, and engineering. The AMTE title was formed by embracing history and recent changes from the A&P to AMT and acknowledging the Avionics skill set by reference to Technical Engineer. When we create the fusion of all the elements related to this industry discipline together we have the AMTE title.
- This paper is only a start. One does not have to see the linear career transition offered here long before imagining we could go beyond the AMTE. Once colleges and professional educational institutions involved in aviation link to create four year degree programs for the AMTE, it is not a stretch to imagine a calculus based program producing aviation engineers in a Masters like program. The title for this group of professionals could be AME (Aviation Maintenance Engineer)

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Background

The FAA estimates that there are approximately 450,000 US certificated A&P technicians. Of this number it is estimated that 180,000 are currently active in their field.

According to a recent NBAA subcommittee demographics study, 40% of active A&P's are employed by airlines and are union represented; 20% work at Maintenance Repair Organizations and another 20% are government employed, 13% are employed by manufacturers and the remaining 7% are business aviation/ga (general aviation). Of the current active population 7% are Avionics technicians. What has not been measured in any study examined is how many A&P technicians are FCC technicians.

Now that you have a basic understanding of how many there are, let's look at excerpts from a recent white paper written in 2004 by Mr. Mike Williams addressing training needs in the aviation maintenance industry. This also illuminates the need for the dramatic change we are proposing for the industry, blending the Avionics role into the traditional A&P role.

- “The demand for skilled technicians is still expected to increase through 2012 at a total rate of approximately 10% (Bureau of Labor Statistics, 2004a). While most job openings during that period will be due to replacement needs, the technology required to maintain newer aircraft will continue to advance, resulting in the need for increasingly complex skill sets on the part of the technician.” (Bureau of Labor Statistics, 2004b).
- “Median wages for technicians in all segments of the industry are approximately \$40,000 (USD) with the lowest 10% earning around \$16,000.”
- “Within the U.S., there appears to be a shortage of young people selecting technical career fields. The focus for most high schools is to prepare their graduates for four-year college programs rather than for two-year technical schools which include the majority of AMT's. In addition, many young people aspiring to a technical career select emerging technologies in fields such as computers or health care where salaries are competitive and working conditions more favorable.”
- “Updating curricula and growing the program is a strategic and vital part of any AMT. Forty three percent of the respondents defined plans for future growth of their program. Some were directly related to the Part 147 program and others were merely an extension of their current aviation curriculum. Response for future growth included the following:”
 - **“Avionics training”**

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Background Continued:

There is another area of interest which is concurrent with the NBAA Maintenance Committee Vision of career growth that comes from renewed FAA efforts within AFS (Flight Standards Service) to search for industry ideas on career development of AMT. We find this to be most refreshing and serendipitous. Below are some of the recent happenings.

- Teleconference meetings on FAA Career Advancement Conference agenda
- Aviation Career Advancement Conference to be held soon
- Previously mentioned published FAA AFS-300 (PAMA supported) White Paper on proposed changes to FAA Part 1, 43 and 65 include many healthy and logical changes in Phase I. Phase II changes address the issue of bringing the Avionics technicians officially under the authority of the FAA and discusses a future AME (Aviation Maintenance Engineer) role that is not very well understood or defined as viewed by this NBAA committee. Phase II changes are admittedly a ways off but this is where the NBAA subcommittee feels there is a ripe area to strategically partner in. This topic is addressed in the Project Bootstrap section of this paper.
- The NBAA Maintenance Subcommittee for Training/Advanced Education is planning to propose this vision of the AMTE soon to the FAA. Hopefully in partnership with other industry groups.

Business has come to the conclusion that industry training expansion is necessary by evolution. OEM's (original equipment manufacturers) and MRO's (maintenance repair organizations) are initiating the incorporation of cross training between A&P's and Avionics technicians.

- JET Teterboro/Embry Riddle internship program in work
- Southwestern corporate jet OEM facility initiating a plan to cross train A&P's and Avionics technicians
- Southeastern corporate jet OEM prepared to make announcement of cross training and certification program between A&P's and Avionics technicians.

Where do Technicians come from? We cannot leave this subject of background without mentioning the contemporary and phenomenal partnership of the educational side of the house for the aviation maintenance industry.

- NCATT (National Center for Aircraft Technician Training) established by Embry-Riddle Aeronautical University, Pennsylvania College of Technology, San Jose State University,

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Background Continued:

Tarrant County College and Weatherford College through a grant from the National Science Foundation is an organization working to establish an industry standard for training and certifying Aircraft Electronics technicians. They were recently high lighted in the recent issue of Avionics Magazine.

- CAA (Council on Aviation Accreditation) is another organization working to enhance educational partnerships for the growth of the Aviation Maintenance Professional. They have an accreditation program that includes nineteen different colleges offering fifty-three BS programs, many for aviation maintenance.
- ATEC (Aviation Technician Education Council) is an organization that represents the majority of 147 FAA regulated schools. ATEC is on a mission to identify trends in the industry and what to do to counteract there deleterious effects on the aviation maintenance community. Does the field seem ripe for harvesting a very potent industry partnership yet?
- Not mentioned in the demographics study of A&P's/AMT's referenced earlier in this paper are the positive impact that military trained technicians have on our industry and what the military is also looking for in dealing with complex technology and the people to fix it. During a recent NBAA Maintenance Committee meeting one of the committee members (Dave Benoff) proposed the military is anxious to train and merge the Mechanical and Avionic technicians as one; the same logical conclusion as the private sector.
- The military career path for the aviation technician is also demanding a higher rank position and with that comes a required college degree. The NBAA vision amazingly proposes the very same thing!

Finally, at the root of this argument for the advanced technical role of the AMTE, we arrive at the driving force. The aircraft complexity issues demand a change in level of knowledge possessed by technicians. The level of Avionic integration and fault reporting goes to every system on a contemporary aircraft. It takes an AMTE to efficiently troubleshoot these aircraft efficiently and return them to service. Examples of these types of aircraft are:

- Cessna Citation 10
- Gulfstream G150, G200, G450, G550
- Bombardier Challenger 604, Global Express, G5000, Global XRS
- Falcon 900EX and 900EX Easy, Falcon 7X Fly by Wire
- Raytheon Hawker Horizon

And the list grows.

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Justification:

By creating a more powerful vertical career progression in an aviation maintenance career one can make oneself more immune to frequent business cycle layoffs. Employing a basic business tenant this dual rated technician (AMTE) would be able to produce more output as defined by employer and the FAA, creating the value proposition and justification for retention during tough times.

Trade magazine editorials all seem to reflect positive feedback from the technicians at large when personal career advancement ideas are discussed.

Business indicates the need more advanced avionics training for complex aircraft.

Combining the two skill sets, A&P and Avionics is as natural an evolution as the combination of a Commercial Pilot Certificate with an ATP. Strengthen the base knowledge with advanced knowledge in the same arena and we provide career advancement automatically. This is truly a winning solution for business and technicians. Other skill sets in the aviation maintenance industry are not as predominant as these major two discussed above. Examples may be welding, NDT and Composite repair. These other skill sets should reside in possible repair specialist rating categories.

Career advancement in a chosen industry is as natural as Mom and apple pie in our society. It breeds economic stability and provides for long tenure at the same time attracting young people in at entry levels because of the promise of vertical growth with time and experience.

Not all of the industry groups fostering change (in one aspect or another) for the aviation technician were mentioned in the background section. There are more...I'm not sure we need to make a stronger argument by attempting to identify all the players on the board. This paper makes a strong argument for a more powerful and robust maintenance technician by combining two traditional roles into one. We have addressed that building a higher career path can attract more people to the industry and keep more in the industry for a lifetime. What remains most important in this equation is how we navigate the tricky course of satisfying the interests of all the partners brought to the table and at the same time conducting ourselves in an altruistic manner for the technicians at large. Aren't they really the most important stakeholder?

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Career Path Progression:

Because the AMTE is a vertical career path derived from the traditional A&P we start with the acceptable multi-path methods already provided by the FAA in Part 65 for the A&P.

Once a person receives their A&P rating the next logical and traditional growth point is the Inspection Authorization achieved after three years of continuous experience in the field and satisfactory test results.

Now that the aviation maintenance professional is well on their way the rest is by choice. If one is satisfied with their personal growth and chooses to remain an experienced A&P they can remain in that state with all due respect.

If the urge to expand and grow in one's personal career path strikes, an A&P technician can take advantage of credits earned in the many approved training schools they have probably attended over the years and transition into a full time program. Full Avionics training under the old order required two years. The first year curriculum was usually dedicated to basic electronics (AC/DC) and mathematics. The second year was geared to aircraft systems, communications, autopilots, digital circuits etc. The proposal is to retain a two year FAA approved standard National Avionics curriculum for an FAA Avionics certification. A student could also fulfill Avionics requirements by earning while they are learning through approved continuous programs. This approach could happen incrementally benchmarked step by step through enrollment in an industry recognition program like PAMA/SAE or AMS offers.

There will be educational institutions among the 147's that offer a full four year degree program (A&P & Avionics) bachelor's degree program as well as other classes included in curricula suited to a four year program.

To attain an AMTE it is proposed that the already educationally qualified applicant present work records of any mix (A&P, IA or Avionics) that represent a continuous active record over a period of ten years. Maintaining the required experience is reflected in the current requirements for an IA. A longer term is necessary for the AMTE reflecting the required experience in the industry to gain the wisdom for their practice.

The future goal for the AMTE position is an FAA certified position and that the educational credentials would be FAA Part 147 regulated just as the A&P program is. There would necessarily be a long impact study and NPRM process cycle to eventually obtain approval for this proposal for an AMTE by the FAA. In the interim our industry at large could certify the AMTE level (sans privileges listed earlier) under the watchful eye of nonprofit organizations already in existence. This early certified group could become a trial group for the FAA to monitor and study. The FAA could advance the privileges proposed as they see fit. Using our industry to temporarily certify the AMTE creates the need for partnerships with NBAA and that is described later in this paper under the "Project Bootstrap" section.

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Privileges exercised by Avionics Technician and the AMTE by FAA:

Since this proposal for the AMTE position assumes full certification of the Avionics Technician via Phase II of the FAA proposed NPRM process already underway, it is the actual return to service privileges that are in need of determination. The A&P/IA certificate privileges are already established and would remain (pitot static water drain removal change in Avionics privileges section) except for the enhancements promoted in Phase I of the same FAA proposed NPRM.

Avionics Technician

- 91.411 and 91.413 two year FAR check signoff authority
- FDR and CVR functional data check signoff authority
- Category II recurrent equipment functional check signoff authority
- ADC (air data computer) quick disconnect visual inspection signoff authority
- Restriction of water drain quick disconnect privilege to Avionics Technicians
- TBD

AMTE

- FAA sets this level at minimum threshold for DER
- FAA part 145 (licensed repair station) would require this rating to reside in a maintenance management or inspection level
- Avionics technician privileges
- A&P technician privileges
- I/A privileges
- TBD

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Achieving NBAA Vision

Since it has already been stated that the time is ripe for change in our industry it is no surprise that there are a wealth of ideas floating around from all parts of the industry advocating their specific brand of change.

The NBAA Maintenance Committee has a proposal that is as different as all the others are relative to one another. The NBAA Vision Plan has been strictly adopted for the technician's welfare alone. To that end we are able to partner and reshape many off the details of the plan to fit some of the others in favor of a strong partnership. This was by design because we knew that it would take industry harmony to the greatest extent possible to successfully achieve industry change for the positive.

Project Bootstrap

Definition

This is the project name of the human engine needed to drive the NBAA vision into reality. Nothing less than a nationwide industry partnership reflecting grassroots support from the technicians will do.

Our Major Potential Partners and Stakeholders

External to NBAA

- PAMA/SAE
- AMS (Aviation Maintenance Society)
- FAA (Federal Aviation Administration)
- ATEC (Aviation Technician Education Council)
- CAA (Council of Aviation Accreditation)
- NCATT (National Center for Aviation Technician Training)
- Flight Safety
- CAe/Simuflyte
- Embry-Riddle
- Global Jet Services
- TBD

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Project Bootstrap continued:

Internal to NBAA

- All NBAA Maintenance Committee Subcommittees
- NBAA Board of Directors
- President NBAA
- All other NBAA Standing Committees

Strategic Plan to Implement Project Bootstrap

How, where and when we gather industry support on this plan is where the rubber hits the road. As mentioned earlier in this paper this project is the most important dynamic of the paper. Not one institution mentioned in this paper has the sovereignty or potency to forward their plan in the face of the rest of the competition.

Communication of the NBAA Vision Plan is crucial and thus the reason for this white paper. Once full internal support has been won it will be necessary to publish this paper using the publishing tools available to NBAA and stakeholders.

We need to constantly look for opportunities and venues, at which to present our materials. The FAA and PAMA/SAE are waiting for this white paper, Mark Dietrich, Chair of the Scholarship subcommittee and Secretary of the NBAA Maintenance Committee, delivered a scholarship presentation at the ATEC meeting and found them waiting to hear more of what the NBAA has to offer.

Below are listed stakeholders/potential partners with simple first blush strategies. We are working towards full endorsement from every stakeholder mentioned plus more. The key is creating a visible brand partnership that benefits both original partners and is seen by the rest of the stakeholders as an attractive force to join.

- PAMA/SAE is a good candidate for partnership when you consider their full support for Phase II of FAA proposed NPRM changes to Parts 1, 43 and 65 mentioned earlier in this paper. The primary factors are listed below:
 1. PAMA's endorsement yields large AMT membership great for NBAA yielding good plan exposure
 2. NPRM proposal Phase II needs an overhaul/substitute in place of AME position. NBAA Vision Plan would make a good candidate.
 3. PAMA/SAE and NBAA have a vested interest in a partnership concerning future career development of the aviation technician.

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Project Bootstrap continued:

4. SAE would be ideal to temporarily certify AMTE's until FAA passes Phase II (NBAA Plan) in NPRM.
 5. NBAA position as the standard setter in the industry enhances PAMA position as they stabilize under the SAE umbrella.
 6. PAMA/NBAA possibility to present together at FAA conference
 7. PAMA technician recognition program has potential to integrate with NBAA Vision plan providing a life cycle training method for AMTE
 8. Initiate partnership with PAMA by inclusion of final edit of this white paper.
- The opportunities are there for AMS and NBAA to make a partnership together. Listed below are critical advantages to achieving NBAA Vision
1. NBAA Maintenance Committee and AMS board share members and values.
 2. AMS is already set up for a certification program
 3. AMS represents an established body of corporate flight operations
 4. NBAA and AMS are rooted in corporate flight operations and share common understanding of one another
- FAA as a stakeholder/partner is a natural extension of the NBAA Vision plan because they are the regulating body that will oversee and extend certificate privileges to the AMTE. They are also actively engaged in the advancement of the technician looking for outreach partners to identify career progression for the technician.
1. FAA is hosting an advancement conference in November 05
 2. FAA already has an NPRM proposal containing certification of the Avionics technician in phase II.
 3. NBAA vision plan could integrate into phase II
 4. FAA also regulates and approves Part 147 school curriculums for AMT's and it would be regulating and approving or acting as oversight for approval of a national standard of training for Avionics technicians
 5. FAA would intimately understand the NBAA Vision plan from the inside out and interpreting it as growth in the career.
 6. FAA could potentially become the most powerful advocate of the plan
- ATEC partnership occurs in time when training for the advanced AMTE role becomes the main question after acceptance of the plan itself. Listed are the main factors supporting partnership.
1. ATEC represent the majority of 147 schools doing the training
 2. ATEC have the curriculum building infrastructure
 3. ATEC may be willing to partner with NBAA

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Project Bootstrap continued:

4. Training between certificated schools and colleges may become competitive over a limited market. Adjudication between institutions may be necessary and ATEC could already have experience in this area.
- CAA and NCATT partnerships are a little unclear at the moment. Much work needs to be done post acceptance of the plan so these accreditation institutions have proper cycle time and definition for the individual roles they may play in executing an academic strategy. Their main advantage lies in the future development of a four year bachelor degree program for the AMTE NBAA Vision plan goal of producing career plan growth and evolution from a blue collar trade career to a profession.
 - Commercial training providers (e.g. Flight Safety, CAe/Simuflight and Global Jet Services) are extremely important to a very important piece of the NBAA Vision Plan. AMT's in the field must be allowed to follow a natural life cycle training course while they are in their working years to be able to reach for the AMTE certificate. There is a ten year experience requirement for the AMTE certificate, so allowing the courseware to follow the avionics curriculum fulfills the needs of the AMT after the AMTE. We could call this an advanced version of the Flight Safety "Master Technician".
 1. This partnership can create a whole new market for commercial training institutions.
 2. They employ the latest technology learning tools
 3. The AMT can learn while they earn in a normal event process currently practiced.
 4. Many flight departments, MRO's will not fund this expensive education and the AMT's cannot afford it out of their own pocket. It is a popular practice for institutions like NBAA to offer industry sponsored scholarships for these commercial trainers. This would make a great pipeline for ambitious AMT's.
 - There will be many internal partnerships within the NBAA created by this plan initiative. One was just listed above in the discussion of scholarships. These potential partnerships will become obvious as new applications are being discussed during generic NBAA meetings and are rhetorical to this paper. The excitement will be in the discovery for those choosing to volunteer their time to the NBAA.

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NBAA Vision Plan Trial Program

The NBAA Maintenance subcommittee authoring and promoting this industry evolving plan endeavors to practice more than just theory. Included within the five member volunteer group are managers and directors (some still practicing A&P's) imbued with a healthy amount of skepticism. One resides in the "show me" state of Missouri. To that end trial groups within the natural business course of the members involved are in process and are described below.

The plan proposal speaks to the AMTE as if that were a theoretical group. If you have not drawn from this paper that we are addressing a phenomenon that is already underway naturally, causing a change in the industry, then a central point of this paper has been missed. According to the AEA (Aircraft Electrical Association) listing of a US Bureau of Labor statistic, there are approximately twelve thousand non FAA rated FCC Avionics technicians. It is not known how many are working outside the Avionics repair station environment but you will see them throughout the country in corporate flight departments. Without return service privileges or a repair station to work under the only way they can practice is to earn their A&P certificate. They are virtual AMTE's! We are formally declaring what already exists and propose to recognize these virtual AMTE's natural career extension and growth. They are there because their services are required and because they are achievers.

Below is listed one trial for the development of a future AMTE role. There will be more to come.

➤ Trial One

Mr. David Heydt, Director of Maintenance Jet Aviation Teterboro and NBAA subcommittee Co-Chair, has a business plan and partnership with Embry-Riddle to establish an intern process with students of Embry-Riddle. The basic plan is under development regarding internships for students and will expand in the near future to include cross training of A&P and Avionics students.

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Conclusion

Theorem: When fifty one percent of rated Aviation technicians have four year degrees (dual major: A/P and Avionics) plus ten years of experience with IA or equivalent experience/distance learning credits with industry certification, the FAA will be led into infrastructural change accommodating the new and higher breed of dual rated technicians. The technicians will face and meet the challenges of new technology. Let's be bold because they have earned it and call them *Aviation Maintenance Technical Engineers*.

Proof: Circumstantial, Every class of accepted professional in our country uses a similar process and discipline. We insist that we gather resources for needed programs like recognition, awards, standard curriculum for Avionics training or incremental changes to FAR's but that we also participate actively together to forge a vision and execute logical extensions of career growth for the Aviation Maintenance Professional. We are responsible for the fate of our industry now; it is up to us to build on the solid foundation laid by our predecessors too numerous to mention. We must focus our energy on Project Bootstrap (Industry partnership) in the not too distant future.

In a large city in Heartland America there is only one small (FAA 147 approved) school for aviation maintenance training; it is populated with individuals that have that familiar gleam in their eye, energy in their walk and affinity for things that fly and smell like burned gas or kerosene. They ask the same question many of us did, "Where do I go once I'm an A&P technician?" We owe them a bright future and a long growth path with rewards created by their own efforts. The time is short and the need is great. We believe Charley would approve.

The NBAA Maintenance Advanced Education/Training Subcommittee Co-Chairs

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Tim Steinhauser	NBAA Maintenance Subcommittee Co-Chair
Gene Claus	NBAA Maintenance Subcommittee Co-Chair
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