Project Appleseed®
Appleseed Academy Rifle Textbook

APPLESEED ACADEMY™

Second Edition (2.0) – July 21st, 2023

TABLE OF CONTENTS

Figures

Introduction

The concept for Appleseed Academy was born in 2014 at a range in Rising Fawn, Georgia. A few guys were setting up a range before an Appleseed and one of them said, "Hey, wouldn't it be cool if…?" The purpose was twofold: to help ensure consistency across the program and to be a resource during the other 363 days each year we are not attending an Instructor Boot Camp. The idea evolved over time. Production began in 2020.

This Textbook is provided for learning and reference. Except where specified, it does not replace or supersede the Instructor Manual. It contains many of the scripts and transcripts of the Academy Videos, slightly modified for print. Some of these scripts include action or stage queues – note them with common sense.

We don't want you to memorize a script. Instead, we're offering good examples to work from as you learn to teach more efficiently. Appleseed volunteers have some latitude to present instruction in their own words, except for verbatim material. Of course, there are words, phrases, and styles that are distinctly Appleseed. It's important we retain that tradition. This Textbook includes much of it.

The Appleseed Academy videos and Textbook would not be possible without contributions of some special people:

Appleseed Chief Master Instructor and Faculty Member: *DonD*

Appleseed Academy Faculty: *Cleveland, CokeGuy, CorgiMom, Ghostring, Google, Monkey, Morpheus, Ramblin' Wreck, Steel Thunder*

Director: *Nashville Stage*

Production Crew: *BluegrassColonel, Old Navy Doc, Tennessee Beast*

I am humbled by the team's selfless contributions. Thanks, guys.

In Liberty,
Maximum Ordinate
Producer

Chapter 1: Appleseed Vision, Mission, and Goals

Appleseed Vision

To Reignite the Spirit of the American Revolution.

Appleseed Mission

REIGNITE... our spirit that made America an exceptional nation.
TEACH...our history
INSPIRE... the hearts and minds of all Americans to study and understand and apply the founding principles of liberty and freedom guaranteed under our Constitution won in blood during the American Revolution.
EDUCATE...our people about the heritage of freedom and Natural Rights our forefathers fought for in the American Revolution.
CHANGE... our future by returning to the founding principles of liberty and freedom guaranteed under our Constitution.

Appleseed Goals

1. Reignite the "Spirit of the American Revolution."
2. To teach the events of April 19th, 1775 to each and every American.
3. Reach the maximum number of Americans possible each year through rifle clinics, LibertySeeds, public speaking appearances, newspaper and magazine articles, blog, Facebook, Web posts, trade shows and other methods. Consistently increase the number of face-to-face contacts from year-to-year.
4. To strengthen the great tradition of the American Rifleman by teaching skill with a rifle.
5. Develop relationships and alliances with like-minded civic organizations.
6. Develop and nurture a highly competent cadre of instructors and volunteers across America to fulfill our mission.
7. Influence educators to teach the reasons for the American Revolution and real factual history.
8. Develop educational materials for use by educators and home school families/groups.
9. Develop new and improved methods to communicate our message to the public.
10. Effectively communicate with members of the Appleseed instructor corps and Applecore volunteers.

Chapter 2: Appleseed Guidelines

Message from Fred:
The title is a misnomer. I first started developing a list of "Appleseed Guidelines" as part of the presentation at AIBCs, and have been adding to the list over the course of the 14 or so AIBCs to date. The list below is about twice the length of the original, and no doubt will be added to in the future. So, it is not likely to be "the entire set"!

What is the function of a guideline? Since no 2 Appleseeds are ever alike, because of variations in students, instructors, facilities, even weather - you cannot lay down a fine-tuned anything - not even a COF - and your POI itself is likely to be put awry by contact with the reality that is an "Appleseed in action". Some general principles are much needed to provide you with guidance as to how to deal with the unexpected. (Contrary to claims that this program is geared to "micro-managing", it is not. If there's ever a program which is immune to micro-managing, Appleseed is it.)

The first - always FIRST - guideline is SAFETY. *"Do no harm" might be another way to say it. Maybe better, "ALLOW no harm". This is a guideline which sets a premium on PREVENTION. But the safety guideline is a specific guideline to the operational unfolding of the weekend Appleseed. There are other general guidelines which apply not only to how to run an Appleseed, but to how to run an Appleseed as a program, and how you need to relate to this program, and what actions you need to be doing if this program is to be a success.*

Let's look at those general guidelines (so far as I know, this is the first posted attempt at codifying "rules of behavior" or "rules to guide action by" in the history of Appleseed.)

-Fred

Appleseed Guidelines – The Entire Set
A list which will probably never be complete and a list which will be added to, from time to time.

1. **Stay focused on the Mission.** Of all the general guidelines, this is the most important. This one will keep you focused on what you need to be doing. This one will protect you from wandering off into areas of contention which do not really matter to the overall program, and are better avoided entirely. This one will "armor plate" you so that the "slings and arrows" of any program manned by humans will not cause you to throw up your hands in disgust, and leave the program. After all, how much do those slings and arrows count, when compared to what was endured for Liberty at Valley Forge? Keep to this guideline and you will not only be strong in the program, but an example to everyone else of how not to be a summer soldier and sunshine patriot - and that's good for the cause. When you are focused on the Mission, you understand the meaning of what "don't sweat the small stuff" means. In the face of the mighty Mission we have undertaken, all the slings and arrows, all the aggravations, every single thing or person in this program which you don't like, which irritates the heck out of you - it all becomes magically part of "the small stuff" - and suddenly, you don't care about it, anymore. They become the flies which bounce off your armor plate as you stand tall and proud in the Mission.

2. **Effectiveness.** Unlike many other programs, Appleseed is committed to being effective, which means reality oriented, constantly reflecting on the results of our actions, evaluating them, and modifying them so that they become even more effective. The Internal After Action Reports (IAARs) are a concrete example of this. Effectiveness is an issue for the program, but is an issue for each volunteer in it, as well. You donate your valuable time and energy to a cause you care much about. Surely you want every second of that time and every ounce of that energy to advance the program as much as possible. You want to be as effective as you can be.
3. **IAO**, or as I say at AIBCs for mnemonic purposes, "the International Association of Organizations" - but really it stands for something which was recognized very early in the program: that Appleseeds are fraught with challenges, obstacles, things which will try and slow you down and lessen your effectiveness, so you have at all times to be prepared to "**Improvise, Adapt, and Overcome**". We have some remarkable instances of that, from building *90 feet* of overhead shelter on Friday night at the April 2006 Evansville, IN Appleseed, and taking it down Sunday evening!), to keeping Appleseed going in October 2008 at Ben Avery range in Phoenix, AZ under wind conditions which caused the Civilian Marksmanship Program (CMP) Western Games to be canceled, and their public ranges to be shut down but Appleseed improvised, adapted - and overcame! Winterseeds offer some astounding examples of this.
4. **Beat the Time Monkey.** It was quickly realized that the momentum at any Appleseed is dependent almost entirely on the SB to keep things moving. But let's understand and recognize that the "Time Monkey" is not only on the SB's back - it's on Appleseed's back - as the ship continues to sink. Never lose sight of the fact that "urgency" should be your watchword in this program. If you care about this program, if you care about this country, if you care about saving it - keep that notion of urgency. It's needed to keep you on track with what you need to be on track about!
5. **Simplicity and Precision.** All the early entries on this list are things recognized early in the program. Keep it simple. Keep it precise. One backs up the other. Fewer words of explanation reduce the learning burden of the students - so long as those few words are *precise*. The new instructor will find that as he/she acquires experience instructing, he/she will (and should) be moving in a steady direction toward saying less and choosing the most precise words, so that he/she continually become more effective at what he/she does. Inches - Minutes – Clicks (IMC) is 1 example where you as an instructor have to watch your words, carefully. One mistake in saying "inches" when you mean "minutes" can throw everyone for a loop - especially if you don't catch the error. I recommend that when dealing with IMC, you <u>always</u> say the unit with the measurement - as in "4 MOA", "4 clicks", and "4 inches".
6. **Total Participant Involvement (TPI).** An early concept, borrowed from the National Rifle Association Certified Instructor Program (*hat tipped*). Total Participant Involvement recognizes that people learn best by doing, not by hearing - so every time you get the chance, get the students involved - in answering questions, in doing things rather than hearing things - even in running the line (see "IAO", above). I have on occasion asked promising students to conduct the instructional review on Sunday morning as part of TPI - it works!
7. **Teach 'em to fish.** A companion that goes arm-in-arm with TPI. <u>Never</u> miss a chance to turn a student's question back on him - after all, you're not likely going to be at the range with him/her, next time he/she goes - so you need to get them into becoming aware of and analyzing their faults early on - the sooner, the better.

8. **Mentor!** - The implication is of kinder-and-gentler transfer of knowledge from an older, more-experienced person, to a younger, less experienced, person - but in this program, "mentoring" is expanded to helping anyone at any time: become aware of and solve problems in performance, and solving them. We're all in this program to improve ourselves by becoming more effective Appleseeders; and we are all in this program to help each other become better people. You see an instructor with a problem communicating, one he/she clearly is not aware of, one that is harming his effectiveness - and you don't want to help him out? I hope that's not the case. You can feel free to mentor me anytime you see me being less than effective - I appreciate the constant improvement in my effectiveness which such mentoring causes.☺
9. **Appleseed is "friend to all, enemy to none".** We realize that fighting with others, with having enemies, is non-productive to our Mission. Therefore, we have no enemies other than Ignorance, Apathy, and Laziness. There'll be groups which will try to treat us as enemies, but no groups or people we'll treat as enemies. We should all strive to meet that "friends to all" standard, not only in dealing with non-Appleseeders, but in dealing with others in the program.
10. **No current politics.** Yet another early conscious decision in the program - to avoid references to any modern politics. The concept is cemented in our saying, "Appleseed does not care about elections - which, like the weather, are changeable. Appleseed is about promoting climate change, so that elections get better and better." This can be a tough one, as it will sneak up on you. You may feel at an instructor's meeting that you can voice some political biases, only to find out that others in the program do not share your views (*note: based on a personal experience!*). So, let's work to keep all current politics out of the program.
11. **Frame.** Tell students what to think of their experiences, putting things into perspective for them - and tell them "the why" of what they need to do. Too many times, at an Appleseed, I've seen an instructor come out, hold up a Government Issue/General Infantry (G.I.) web sling, and start talking about how to use it, when half the people on line don't have a sling, and half of the rest don't have a G.I. one. When this happens, the principle of "framing" is violated; the students haven't been told WHY they need to know how to adjust a G.I. sling.
12. **Problems? We don't have to live with problems, in this program.** Any time you come across a problem, your first thought should be that quote. "We DON'T have to live with problems in this program". Hence, if we don't, then why don't we fix them, as they become known? Makes sense, doesn't it? Yet my personal experience in this program is that I'm far more likely to come across people griping about a problem, seemingly oblivious to the notion that "problems need to be fixed", and that, as Appleseeders, they should be fixing them (see #24 below).
13. **You have a good idea? You need to be ready to implement it**. Since anyone enthusiastic in this program is chock-full of good ideas, (so much so that) in the early days of the program, we quickly recognized there were *far more good ideas than people to make them happen*. Hence the rule that, "if your idea is good, you're the best person to make it happen". In other words, don't expect some other overworked volunteer drop everything to do it for you (see #24 below). The program needs self-starters, but before you embark on an idea or project, talk to your leadership. Your idea may already be in-progress, might work at cross-purposes with a current plan, or there might not be enough resources to implement it. Every volunteer's time is valuable and we don't want it wasted on initiatives that won't come to fruition.

14. **Train your replacement.** Sometimes you're most effective when you do nothing, when you let them learn by doing, by TPI. But if this program is to double every year, you need to train at least 1 person every 12 months to do what you do. Better, train 2 or 3, to make up for those who don't meet that minimum effectiveness.
15. **Always have a learnable attitude.** In contrast to a teachable attitude, which requires a teacher, a learnable attitude requires only that you keep your eyes open, and learn from what you see. Develop the ability to know what's important, and what's not; and develop the wisdom to know the difference. Not everything is worth fighting for, and about. Don't sweat the small stuff - and *in the face of the Mission, it's ALL small stuff*. In addition, here's something that might help: Would you rather be *right*, or be *happy*? Some things aren't worth fighting over, or even disputing about. You can choose to be happy, rather than fight. Fighting hardly ever makes any of us happy.
16. **Bring someone with you to every Appleseed you attend.** Use the "low tech way" to bring someone with you to every Appleseed you come to. Carpool with them and "Appleseed" them on the way to the event. The likelihood of getting an instructor(s)-in-training (IIT) out of someone you bring is significantly greater than with someone you didn't bring, but simply met on the line. The average nationwide turnout at Appleseed events is about 16. If there's an average of 4 IITs and each brings someone, our nationwide average would be 20. That's an increase of 20% in turnout! Yes, it's worth the effort.
17. **Try to "Appleseed" people** - not new in concept, but new as a guideline. Try to "Appleseed" everyone you meet. Certainly, try and "Appleseed" people who may be influential in other groups / organizations as the fastest way to grow the program - and faster is better, right?
18. **Always try to build bridges and get more Appleseeds at a location, up to 1 per month**. The goal is an Appleseed a month, in every county in this nation. The intermediate goal is an Appleseed every month at each Appleseed location. Don't sweat low turnouts as a reason NOT to do this. "Low turnout" is a problem we need to master, and we don't do it by cutting back, we do it by solving the problem. I look toward setting up more Appleseeds as fast as we can, and recruiting instructors as fast as we can, as **building our infrastructure**, so that when we finally master promotions, and a surge of people come to fill the Appleseed firing lines, we'll have the firing lines there for them to fill.
19. **Make sure someone is appointed a "7th-stepper" at each Appleseed.** That person, an instructor (i.e., the 7th Stepper), will understand the SB often has too much on his plate to give "7th-stepping" the attention it needs. So, the "7th-step" coordinator will actively speak to promising students about becoming instructors; will record contact data, ensure that contact is followed up by phone or e-mail, and take any steps needed to ensure the new volunteer gets all the help he or she needs in those first few critical steps along the Appleseed instructor pathway.
20. **Self-improvement - to become a better, more effective, person - is your goal in Appleseed.** We are all in this program to be effective. Not one of us are in this program to be ineffective. We all want to see this program be a success. If we can, by improving ourselves, make our efforts that much more productive, then why wouldn't we want to? I've said it often: Ask a new person to Appleseed, "what Appleseed is about", and he or she will likely answer "rifle marksmanship". Ask an instructor, and he or she will say "heritage"; ask an instructor "old in the program" and he or she will likely nail it: "Appleseed is about self-improvement!"

21. **Seize every opportunity to advance Appleseed.** At the recent NC AIBC, I was asked, "Fred, what do you recommend we do, as a concrete step to take immediately to help this program?" The answer I gave was probably unexpected: Change your thinking. Become so attuned to helping this program that your first thought, in any situation, is "How can I make this help Appleseed?" If Appleseed is about reigniting the spirit of the American Revolution in hearts and minds, and if our enemies Ignorance, Apathy, and Laziness, assisted by their evil handmaidens Arrogance and Complacency have had generations to establish their control, then we need to be on the attack, every chance we get. You need to start "thinking Appleseed". Whatever set of facts confront you; you automatically cast for an opportunity to turn those facts to advancing the program. Stopped by a cop for speeding? We all hate it, but we can at least hand him a tri-fold and tell him, "It's really cheap for law enforcement officers (LEOs)" (Heck, you may only get a warning!). Your dreaded in-laws coming to visit this weekend? Hope there's an Appleseed nearby, so you can get them out of the house - and out of your hair! Once you start doing this, once you start "thinking Appleseed", you'll be surprised at the wide-open opportunities to help the Cause which you see unfolding before you.

22. **Honesty!** Implicit with the mandate to IAAR is to disclose not only the positives, but the negatives, so that improvements can be made to future Appleseeds. But the longer I'm in this program, the more the requirement for "honesty" seems to me to permeate an effective Appleseed program – and *to the extent honesty does not permeate the program, we have a less effective Appleseed program*. "Honesty" demands that when you see a person with a problem who seems unaware of it, that you offer your input to not only make him more self-aware, but allow him the opportunity, by fixing the problem, to become a better person, and a more effective Appleseeder. *"Honesty" demands that you be honest with everyone:* The people "below" you in the program; the people "above" you, and your "equals" (*PS. Everyone in this program is equal; we are all dedicated Americans striving to keep the SS America from sinking - yet some of us persist in old habits of thinking of others in the program as either being "above" or "below" us*).

23. **"Step up!"** I introduce this at AIBCs in the following fashion: You don't have to go far on our forum to run across a quote something like, "Evil triumphs when good men do nothing." It's even in someone's signature line. But what's remarkable is that so few people do it. So few people, when they see a problem in this program, actually step up to address it, to fix it. So, few people in this program (a program seemingly full of claims of personal "ownership of Appleseed") seem to take matters in their own hands when they see a problem, and make this a better program. It's a shame, and it IS a shame. You need to "step up", to be, and not just on the Appleseed firing line, as an instructor. You need to be proactive, to see a problem, to see a need for some help, and add your efforts, to make this program a more effective program.

24. **Persist!** Never give up, because this entire program infuses the spirit of "never giving up", of remembering the people more than 2 centuries ago never gave up. So, persist in the face of doubt; persist in the face of discouragement. Persist even when you think success is not obtainable. Persist, *because you can't give up on saving your country.* Not ever.

25. **Be a rock, not a "Chicken Little".** The people who won the Revolutionary War for us were the men in the Continental Army who never broke, who never ran. When the militia broke ranks and ran, these men stood firm; when other regiments in the army broke and ran, the men in the Delaware and Maryland regiments could be counted on to be there, rock steady,

impervious to panic and hysteria. I like to think of the men in Parker's company as being like those unbreakable Continental Army soldiers. When you run across someone spreading doubt about this program; when someone personal messages (PM) something which tends to create fear for the future of the program, become a rock. Let the wave of hysteria break over you, and when it passes, you are still there, unmoved. Indeed, you immediately begin to "fix the problem", to mentor the "Chicken Little". Surely, no "Chicken Little" really wants to be a Chicken Little. So, some reassurance may be in order. Remember the "Red Badge of Courage"? The new soldier, inexperienced, unable to interpret what is going on about him? The one who breaks and runs? But who then, having experienced panic, followed by shame, becomes a good and brave soldier? Sometimes we all have to go through that process, get it out of our system, before we settle down to getting things done. You can, by being a rock, help ease someone's progress into being a better Appleseeder - and a better American.

26. **Never speak ill <u>of</u> a fellow Appleseeder, and never speak ill <u>to</u> a fellow Appleseeder.** This is not to mean no one can be criticized in this program, but means when you criticize, you do it in a mentoring way, which means in a way calculated to get results. Nor is this meant to cut off frank and honest discussion about an Appleseeder to his state coordinator or someone else in the program that needs to know about problems so they can be fixed. What it does mean is that you keep your ego / emotions out of Appleseed, so that interaction never becomes "personal". Keep it always "mission oriented" and you'll be safe, and happier. Years, now, on the internet, proves the truth of this to me.

27. **"CPR Always" is your friend.** Since we **Respect** each other in this outfit, we also deal with each other with **Courtesy** and **Politeness**. Yes, I'm thinking we shouldn't have to say this, but my years of experience say otherwise.

As future guidelines, I bet we could add "be a team player" and "get a job done, once you start it" - and many others we can all think of, but let's work on the above list, and see if we can see improvement not only in ourselves, but in the program.

You know, one of the unique things about Appleseed is that volunteers have a standard of behavior to live up to. Just as Riflemen do, as part of what "being a Rifleman" is about. The standard was expressed over 2 centuries ago, by one of our enemies: ***Everyone in this program, every Rifleman, should strive to be a person about whom it can be said, he or she "knows well what they are about".***

When you work with these Guidelines, when you absorb them, they will enable you to be a more effective Appleseed volunteer will enable you to be a more effective Appleseed volunteer.

*I ask you this question: "**Can we build an effective Appleseed program** (i.e., one that will be successful), **on a foundation of ineffective volunteers?"** I think you'll agree: The answer is "No!" To the extent you, and each of us, becomes a more effective Appleseed volunteer, the program becomes stronger, and more effective, and our success becomes more assured.*

I hope you share my feeling about that.

Fred

Chapter 3: Appleseed Insurance Requirements

Appleseed Insurance Requirements, as of June 14th, 2021

(this supercedes version 8.2 of the Instructor Manual)

- All firearms are to remain in the vehicles until after the safety briefing, except as specified below.
- Project Appleseed Instructors, IITs, and Applecore volunteers may open- or conceal-carry pistols at Appleseed events, subject to local laws, host range rules, Project Appleseed carry policy, and Shoot Boss discretion.
- At Appleseed events, shooters may only bring firearms to the line intended for use during the event. Open- or concealed-carry of pistols or other firearms are not allowed on the line by students for any reason.
- All firing lines are to be in the charge of a Full Instructor (Red hat).
- When shooters are carrying firearms between vehicles and the firing line, the maximum number of volunteers will be in the parking area checking to make sure firearms are carried in a safe manner. They should also encourage the shooters to move in a timely fashion.
- Volunteers will be on the line(s) to ensure safety rules are complied with at all times. This is especially important at the end of a long day when shooters are mentally tired. An instructor should be posted at any choke point between the parking area and the firing line.
- The event Shoot Boss has discretion to use non-volunteers as position models, coaches, Range Safety Officers and Line Safety Officers as needed if sufficient volunteers are not available.
- The Red Hat in charge of the line may designate other volunteers to assist him in the capacities of Line Boss, coaches, position models, IITs, safety officers, or other roles needed.
- The Red Hat in charge of the line is responsible for ensuring the line is properly cleared after each string of fire. This can be done through delegation to a responsible and well-trained Line Boss. When training a new Line Boss, a Red Hat should be available to supervise, coach, and provide clear guidance as to how fulfill Line Boss duties. For more details, see “Line Duties and Procedures.”
- The Red Hat in charge of the line may appoint safety officers or coaches to watch/warn about shooters having problems with muzzle control during position changes (often children, the infirm, or the elderly).
- Leaving one or more firing lines open during the lunch break for attendees to get extra practice time or to sort out equipment problems is at the discretion of the Shoot Boss. At any time firearms are being handled, there must be a Red Hat present during the entire time.
- Anytime the line is in a cold condition (e.g., lunch), a Red Hat, Orange Hat or Applecore/RSO must be present in case someone comes to the line and still thinks the line is open. (SBs may need to arrange for relief of volunteer on duty during lunch so he/she can have a break.) The Red or Orange Hat instructor should be in communication with the SB.
- Instructors present at an event must comply with the Project Appleseed controlled substances policy.

Chapter 4: About Project Appleseed

About Project Appleseed Interview Transcript

Unlike most chapters in this text, this chapter is the transcript of the Appleseed Academy interview about our Program and how it's structured. Text is colored so you can easily track the discussion.

Hello. I'm CorgiMom, an instructor with Project Appleseed. With me today is our National Coordinator, Maximum Ordinate, who also serves as a Master Instructor and member of the Appleseed Oversight Committee. In our interview today, we will talk about how our program is structured and where to go for help or answers.

Corgimom: Mo, thank you for sitting down with me today. You're currently serving as National Coordinator for Project Appleseed. What's the job like?
Maximum Ordinate: Thank you for having me.
It's a privilege to serve in Project Appleseed. It's uplifting to work with talented and energetic people who want to wake up sleeping Americans. You can't watch all the efforts on behalf of Liberty and not have hope for the future of our Nation. At the same time, the job can be challenging in ways I didn't expect when I accepted the position.
For me, it's interesting that the position hasn't always been called National Coordinator. Over the years, it's also been called National Director or Chief Regional Coordinator.

CM: Has the job itself changed?
MO: Over the years, I think it's changed a lot. Project Appleseed has evolved. The job of National Coordinator changes with the times, too. It's funny, even after two years on the job I'm still learning stuff about how the program works.

CM: That brings us around to what I'd like us to talk about today – how the program works. We have both new and seasoned volunteers in the program who may wonder: how does Project Appleseed function as an organization? How do things get done?
MO: Well, that's a pretty broad topic. Appleseed is a big program and there's a lot happening behind the scenes to support Shoot Bosses running events.

- For most of us, Project Appleseed is what we see right in front of us.
- When I was an IIT, Appleseed was the crew I worked with. When I became a Shoot Boss, Appleseed got a bit bigger. I had interaction with logistics and scheduling. As a State Coordinator, Appleseed got even bigger for me. I had other SCs to work with and a Regional Coordinator coaching me.

CM: And is the program bigger for you today?
MO: Yeah, definitely.

CM: So, the program is bigger and more complex than most people know of. What advice do you have for someone who is struggling? Maybe they have a problem or suggestion and don't

know where to turn.

MO: That question deserves a bit of Appleseed Guideline #11 – Frame. Before I can answer, we should talk about how Project Appleseed is structured.

- Unlike the military or many corporate organizations, we don't have a Chain of Command. Most of the time, the only people giving commands should be Line Bosses. However, we do have folks who lead and coordinate. They have responsibilities and authority to carry out their jobs and enforce standards, even in a Liberty-based organization. This holds true at from the Red Hat level all the way up to Program-level Leadership.

CM: Program Leadership – you mean the Appleseed Oversight Committee - AOC?

MO: Well, yes, partially. You see, the program is organized in two parallel tracks. There is an administrative track and an instructional track.

- The instructional track starts with our red hats, and goes up through our Shoot Bosses, DSBs, Senior instructors, Master Instructors, and terminates at ISSAC, the Instructor Standards and Advisory Committee. They're the final word on all matters relating to instruction and program standards.
- Then there is the administrative track, which is responsible for the business and overall governance of Appleseed. That starts with State Coordinators and goes up through Regional Coordinators to the National Coordinator and to the AOC. The National Staff also reports up through this track. The AOC is the governing board of Appleseed.

CM: So, what is the AOC and what does the AOC do for the Appleseed Mission?

MO: The Appleseed Oversight Committee is a board that was established in February 2015. It was originally comprised of five members, including a chairman and vice-chairman. In practical terms, the AOC provides oversight of the administration of the program.

- The AOC handles aspects of the program like insurance, industry outreach, marketing, and long-term business strategy. The AOC sets program policies. Lastly, the AOC is also the final arbiter on disciplinary issues, in the rare event something unfortunate like that come up.

CM: I didn't hear you say anything about AOC and Marksmanship or History.

MO: No, and you usually won't. Responsibility of Marksmanship and History standards is entrusted to our second group – the Instructor Standards and Advisory Committee. ISAAC has been around in one form or another for more than a decade.

CM: Before this interview, I'd never heard of ISAAC. What does ISAAC do for the Appleseed Mission?

MO: You're not alone. That's part of why we were asked do this interview. ISAAC works pretty quietly behind the scenes. It's responsible for cadre development and instructional standards. These things include history, marksmanship, promotions, event safety, and all the things associated with running events. ISAAC may get involved when someone needs extra training as an instructor.

- ISAAC consists of all Master Instructors and a handful of our Senior Instructors. Currently, it's led by our Chief Master Instructor – DonD. Our Master Instructors are the standard bearers for the program. It's their primary responsibility and they have authority to carry out that

Mission.

CM: You've used the word *authority* a few times. Don't you think that'll make some folks uncomfortable? Nobody in *this program* likes being told what to do.
MO: You're right, we don't. Unless you're the Line Boss, authority isn't about barking orders. It's about empowering people to be effective. That's Appleseed Guideline #2: Effectiveness.

- Master and Senior Instructors are empowered to coach, teach, and mentor us to be the best Instructors we can be. Think about it. As volunteers, we give our most precious resource, time, to a cause we care about. I believe every volunteer wants the time they invest to advance Liberty.

CM: When you think about it, it's really no different than the responsibilities a Shoot Boss has at an event, but just on a bigger scale.
MO: Exactly. It's not about being in charge, it's about taking care of the mission and the people in our charge. Sometimes taking care of people is a pat on the back. Sometimes it's a mentoring session to help someone grow to be awesome. I've been on the receiving end of both over the years.

CM: You mentioned the National Staff. That sounds important. What do they do for our Mission?
MO: Well, they are important. The National Staff is a group of volunteers who handle the day-to-day business for Project Appleseed.

- The team includes the functions of Information Technology, Customer Service, Logistics, Applecore, Budget, Ladyseed, and Special Project Officers. Our Chief of Marketing from the AOC cheerfully assists and advises the National Staff.
- The Staff is supported by a bookkeeper and a warehouse crew, which are some of the services we pay for. Supporting the Staff are other volunteers committed to doing small but important jobs.

CM: Like what?
MO: Okay, for example, there's one person who answers the emails for loaner rifle requests. There's another person who works with our Insurance Company to get certificates. These are just a couple of the critical functions that happen quietly in the background to help the program operate smoothly.

CM: What do the Regional and State Coordinators do?
MO: Good question. The Regional and State Coordinators are a critical part of the administrative track and are responsible for the success of their respective areas. They're part of the chain of coordination between volunteers at the crew level and "National". RCs and SCs have responsibility and authority to set goals for their particular areas. They communicate up and down, identify resource requirements, and help solve problems.

CM: Why do you say National with air quotes?
MO: It makes me laugh a bit. Despite rumors to the contrary, there's no *corporate* Appleseed

office with people munching on donuts and coffee. As Master Instructor Phenry is fond of saying, "Nobody gets a free pass." Members of the AOC, ISAAC, or National Staff are all expected to do shoots like every other volunteer. Minimum of four, stretch goal of ten events per year. "National" is an idea, not a place. It's simply a group of dispersed volunteers who have accepted bigger buckets to bail. All those volunteers also juggle full lives outside of the Program.

CM: This is all good information, but you haven't answered my question yet. Who do I talk to when I have a problem, concern, or idea?
MO: I'm getting there! The answer is… it depends. We have two chains of communication that run parallel: Instructional and Administrative.
If your issue is related to instruction, then your first stop is your Shoot Boss. If they can't find an answer, they will raise it through your local SI or MI. If it requires review by ISAAC, that committee will help. You'll get an answer.
If your issue is related to the Administration of Appleseed, then odds are you're going to reach out to your State Coordinator. If they can't fix it, they'll talk to the RC, and then me. If necessary, we'll bring the issue to the AOC for review. Again, you will get an answer.

CM: Can I ask about some examples?
MO: Of course. Fire away!

A reimbursement problem
That's administrative - State Coordinator

A question about shoot safety
That's instructional - Shoot Boss to Senior Instructor

A marketing idea
That's administrative - State Coordinator

An idea for a new target
That's instructional - Shoot Boss to Senior Instructor

An idea for a new store product
That's administrative - State Coordinator

Checking out a potential range
That's *mostly* instructional, Local SB and State Coordinator

Requesting pre-approval of an expense
That's administrative – State to Regional Coordinator

Odds are, your Shoot Boss, Senior Instructor, or State Coordinator will have an answer. But if they don't, they'll raise the issue up for help. The goal is to resolve issues at the lowest level

possible.

CM: Everything you described seems pretty cut and dried. It must be a neat and clean org chart!

MO: I wish I could say that, but I can't. Many volunteers are dual hatted. For example, consider a Senior Instructor who's also serving as a State Coordinator. (A guy like that is double-tough by the way.) Those roles overlap quite a bit, so the org chart isn't quite clean as you might expect. My best advice is: when faced with a problem or issue first ask yourself if it's Instructional or Administrative? Then, go to the most appropriate person in your State or Region.

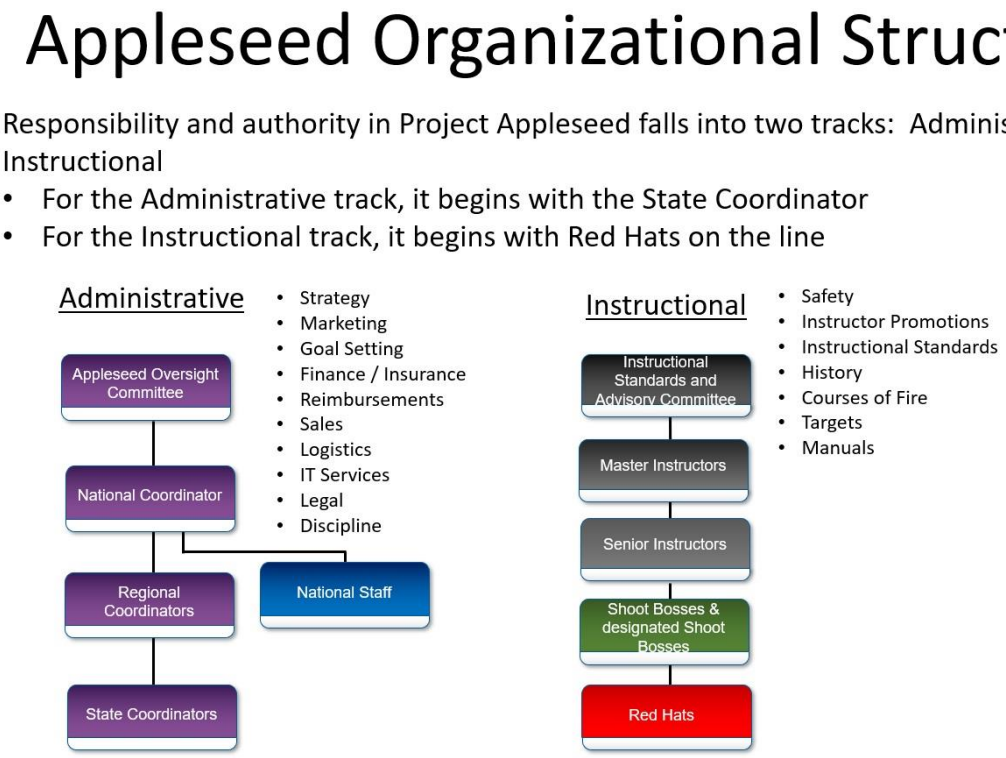

Figure 1 - Appleseed Organization Structure

CM: So, am I'm hearing you say we don't work for each other, but we work towards a common goal?

MO: I didn't say it so eloquently, but that's right. Even so, there is accountability across the program. Appleseed is organized so every volunteer from the newest orange hat to the Chairman of the AOC is accountable to someone through the Instructional and Administrative sides of the program.

CM: There's some comfort in knowing we have checks and balances across the program. Before we wrap up, do you have anything else you'd like to talk about?
MO: Since you offered, yes. It's not easy being an Appleseed volunteer. It takes commitment and sacrifice. So, to every volunteer watching this – thank you. Thank you for what you do to preserve Liberty.

- If I have any advice for volunteers, it's this: Watch out for each other. Take care of each other. Build each other up. Don't be afraid to ask for help if you need it.
- On the other hand, avoid the rumor mill. Avoid people who are persistently negative. Those things are a detriment to the mission and will grind your spirit down.
- Keep your eyes and heart focused on the mission – the rest of it is small stuff. Stay on Mission and Stay on Message.

CM: Maximum Ordinate, thank you for talking to us today. You've certainly given us a lot to think about. Thanks for sharing what you've learned over many years the Program.
MO: You're welcome. Thank you for inviting me. And remember, it's about Liberty, yo.

Chapter 5: Registration Desk Operations

Registration Desk Operations

The Registration Desk is a very important area for several reasons. You will be one of the first contacts the shooters will have with the organization. So, it is important that you remain professional and welcoming at all times.

Additionally, this area will ensure that all shooters are paid, registered, and have signed liability waivers before proceeding to the actual event. The Registration Desk should be set up well before the shoot start time in order to accommodate shooters as they arrive. When you reach the event, get together with your Shoot Boss to go over his or her preferred registration process. They will have a list of all the shooters as well as pre-filled or blank waivers, t-shirts, chamber flags and handouts. The Shoot Boss may also have other helpful supplies like clipboards, pens, Sharpies, and nametags or duct tape.

Confirm with your Shoot Boss how much the range fees are for the event, if any, which you will be responsible for collecting from each shooter. The Shoot Boss might provide you with a money bag or box with change in it, if needed. Be prepared to collect range fees for both days if this is a two-day event. Most shooters are prepared to pay for both days when they arrive, and it simplifies registration on the second day. Also, check to see if the Shoot Boss wants waivers issued in the parking lot or for you to do it at the desk.

Once you have gone over all this with the Shoot Boss, take some time to organize the Registration Desk to streamline the process for you. Clipboards and pens for completing waivers, Sharpies and nametags or tape to write names on (you may even want to take the time to write up the name-tags for those who pre-registered), t-shirts organized by size, perhaps rolled up, rubber-banded with a chamber flag twisted in and the Rifleman Guidebook inserted.

As attendees arrive, greet them warmly and ask their name. Keep the registration list in front of you and make careful checks as you collect completed waivers and range fees. Don't rush through the process. Shooters might need to sign two waivers, one for Project Appleseed and one for the range. Any minors must have their parent or guardian sign their waivers. If someone is just there to observe they must also sign the waivers.

If the registration area starts to get crowded, don’t be afraid to ask folks to please form a line. Nobody will complain and it allows you to ensure that the registration area is a place of calm and each shooter is registered correctly and completely.

The most important part of your job is to ensure that completed waivers are filled out correctly and signed. Remember to check that the attendee has circled either GIVE or REFUSE permission for Project Appleseed to take their photo as well as use photos they take on the second page of the waiver. If anyone circled REFUSE you need to communicate this to your Shoot Boss, and other instructors as well as differentiate their nametag somehow, like with a different color Sharpie or duct tape. This will allow all Project Appleseed volunteers to immediately differentiate them and ensure that they are not mistakenly caught on camera.

After you've received completed waivers and range fees from the attendees, give them their t-shirts, chamber flags, handout, and nametag. T-shirt sizes are listed beside their name on the registration list. Ask shooters to put their nametag somewhere on their back, or on the back of their hats so it can be seen when they are on the firing line. They may need help with this if they don't have a friend or family member with them.

After a shooter is properly checked in, it is customary to direct them to return to their vehicle, gather all gear except for firearms, and go to the firing line and set up. Be sure to remind them that all firearms stay in the car until after the safety briefing. However, depending on shoot boss preference and range rules, this is not always the case. If you are unsure, check with your Shoot Boss.

Once all shooters have arrived and completed the registration process, or the event is about to start, do one final check to confirm you have completed waivers for each shooter present, the correct amount of fees collected and the same amount of change the Shoot Boss gave you to start with. Then turn everything in to the Shoot Boss.

If it is a two-day event, be prepared the second day to again greet shooters, give new nametags if needed, and check them off the list as they arrive.

Remember to be professional, friendly, and organized because this will ensure shooters feel welcome and trust they are in for a safe and fun event.

Chapter 6: Parking Lot Drill

Parking Lot Drill is an important duty at a Project Appleseed event. When assigned to this duty, your role is to ensure safety, greet shooters, and direct them to where they need to go. Specifics about parking lot drill can vary based on the range where you're working. Parking lot drill has two major missions: Greeting the Shooters and later, bringing Rifles to the Line.

When you're greeting Shooters, you're going to focus on three things:

- First, greet them with a friendly smile and welcome them to Project Appleseed. You might be the very first Appleseeder they've ever met, so it's important to give a good impression.
- Second, ask them to leave all firearms in the car, including handguns. Appleseed policy has been, and continues to be, that attendees may not carry handguns at Appleseed events, regardless of local laws or range rules. Should an attendee disagree with this policy, advise them to discuss it with the Shoot Boss.
- Third, provide clear directions to the registration desk where they will Check-in. Some Shoot Bosses may ask you to distribute Liability Waiver to shooters in the parking lot so shooters arrive to the registration desk prepared. That's entirely Shoot Boss discretion.

When you're assisting with Rifles to the Line, the major focus is safety. Observe to make sure shooters transport their rifles and equipment to the line in a safe and efficient manner. Make sure uncased rifles have been made safe, and that muzzles stay in a safe direction. If there are range specific rules for moving rifles to the line, ensure they are followed so we maintain good relations with our host ranges.

Chapter 7: Safety

Safety Briefing Framing

The primary goal of the Safety Briefing is to produce shooters who will be able to conduct themselves safely on the firing line; if you conduct the briefing exceptionally well, your shooters would be able to conduct a passable safety brief for others, thereby helping to pass on the tradition. As such, every volunteer should know and be able to give this brief.

The safety brief consists of *three parts*: 4 Safety Rules, Safe Rifle, Ammo malfunctions.

- The 4 Safety Rules and the steps to a Safe Rifle are verbatim material. This means that they should be presented word-for-word. Changing the order, skipping, or adding steps or rules is not permitted.
- When teaching a list in Project Appleseed, use the List-Explain-List format. First, we give the list, then we explain each item, then we chorus the list. The format and repetition help shooters retain critical information. Also, it's important that you tailor your explanations to the audience.
- Please be aware of host range rules. They may be more restrictive than Project Appleseed rules and we need to respect our host range requirements. Check with your Shoot Boss before giving the safety briefing to ensure our briefing is compatible with the host range.

4 Safety Rules Framing

Like all blocks of instruction, the first thing we do is Frame the instruction. "Framing" is the process of providing answers to the questions of "Why?" "What" and "How".

- As for the "Why?"- We explain that we have four rules unique to Project Appleseed and everyone is expected to follow them; following these rules is the best way to ensure their own safety at this event.
- As for the "What"- There are four rules. No need to dwell on this.
- As for the "How"- inform the shooters that you will first list the rules, explain them, then they will be expected to chorus these rules.

When we give the 4 Safety Rules, list them one a time, clearly and confidently. You may use a visual aid for the shooters, but you should not rely upon it to recite the safety rules.

Once you have listed the safety rules, you'll explain them. Let's go over some of the talking points for the safety rules:

1. Always keep the muzzle in a safe direction: This applies at all times. Range rules, common sense and environment dictate what a safe direction is. At most ranges safe directions are going to be UP or down range. In an urban environment, or indoor range - down may be considered a safe direction.

Specific times to be extra vigilant for violations are when shooters are transporting uncased rifles to the line, when they are slinging up, or when they are transitioning to either the sitting

or prone positions.

2. Do not load until given the load command: Explain the difference between preparing or prepping a magazine (inserting cartridges into a magazine) and the act of inserting the magazine into the rifle. It can be helpful to have a demo magazine with you to show when explaining this rule.

3. Keep your finger off the trigger until the sights are on the target: Explain that the shooters finger should stay outside the trigger guard, preferably along the side of their rifle or behind the trigger guard. It's ok to put your finger on the trigger once the sights are on your target backer.

4. Make sure those around you follow the safety rules: Everyone shares in the responsibility of ensuring none of us go home with any extra holes. If you see something that even remotely seems unsafe, call attention to it. Everyone owns the CEASE FIRE command. Remind people to always be aware of muzzle control. If they are burned by hot brass or stung by a bee, always keep the muzzle in a safe direction.

Persistent, or flagrant safety violations will not be tolerated, and a shooter will be asked to leave the line if they cannot follow the safety rules. If you have had to remind a specific shooter about one or more safety rules multiple times, let the SB know, so that they can have a private chat regarding the importance of following the safety rules.

<u>4 Safety Rules Example</u>

Shooter's Center Up!

The information you are about to receive will help ensure your safety, and the safety of those around you. At Project Appleseed we have four safety rules that we expect everyone to follow at all times. I'll list these for you, explain them, and ask you to chorus them back to me.

The Four Safety Rules are:

1. Always Keep the Muzzle In A Safe Direction.
2. Do Not Load Until Given the "Load" Command.
3. Keep Your Finger Off the Trigger Until the Sights Are On the Target.
4. Make Sure Those Around You Follow the Safety Rules.

Let's talk about them.

1. Always Keep the Muzzle In A Safe Direction.

A safe direction means that the rifle is pointed in a direction so that even if it were to unintentionally discharge it would not cause death, injury or damage. For our purposes at an Appleseed, the muzzle should be up during transport and downrange at the firing line. Be careful not to "muzzle sweep" or point your muzzle at anyone else.

2. Do Not Load Until Given the "Load" Command.

Do not load your rifle until given the Load Command. You may always prep a magazine, which is

inserting cartridges into the magazine, but you do not insert the prepped or prepared magazine into your rifle until given the load command.

3. Keep Your Finger Off the Trigger Until the Sights Are On the Target.

Your finger should stay outside the trigger guard, preferably along the side of the rifle until the sights are on the target or the target backer.

4. Make Sure Those Around You Follow the Safety Rules.

There is nobody more invested in ensuring YOUR safety than YOU. We want to make sure nobody goes home with extra holes in them, and we hope you feel the same way. If you see something that might be a safety issue, take immediate corrective action. If necessary, call "Cease Fire! Cease Fire! Cease Fire!" Right now, right there – don't wait for an Instructor or anyone else.

Repeat after me [shooters echo]

1. Always keep the muzzle in a safe direction
2. Do not load until given the load command
3. Keep your finger off the trigger until the sights are on the target
4 Make sure those around you follow the safety rules."

Follow up questions [This is TPI]

- Shooters, what is the most important of all the safety rules? [Group answer: Always keep the muzzle in a safe direction!]
- Shooters, what do you do if you get hot brass down the back of your neck? [Group answer: Always keep the muzzle in a safe direction!]
- Shooters, what do you do if you get stung by a bee? [Group answer: Always keep the muzzle in a safe direction!]
- These rules are not negotiable. Does everyone here agree to abide by these safety rules?
- Flagrant disregard, or a demonstrated inability to follow these rules, will result in your being removed from the firing line.
- What questions do you have about the safety rules?

Excellent. Shoot Boss, do you have anything you'd like to add?

<u>Safe Rifle Framing</u>

Let's talk about teaching Safe Rifle.

You are about to teach your shooters a task that they will be performing dozens, if not hundreds of times over the course of the event. It is important to be clear and concise. You should endeavor to be Simplicity and Precision Personified.

- This is a list of individual tasks, and so it is best to present it in the "List, Explain, List" format, as was done with The Four Safety Rules. Again, this is a Verbatim module- the words used, and the order in which they are presented, may not be substituted. That said, the words you use to explain the steps to making a rifle safe, are yours, so use an explanation that you feel is most likely to be understood by your shooters.
- When teaching Safe Rifle, rather than offering the myriad reasons why such-and-such rifle has a different process, a blanket statement may be given at the beginning, letting shooters know that for some rifles, the process may be a little different, and if they believe that one of these steps doesn't apply to their rifle, to inform an instructor, and that the Instructors will work with those shooters individually to find a suitable workaround.

Safe Rifle Example

Shooters center up! Often during the day when we are finished handling our rifles, you will be instructed to make your rifle safe. Let's talk about how to do that.

There are six steps to making your rifle safe. These steps must be followed in a particular order; if your rifle does not allow you to follow this order, or one of the steps does not seem to apply to your rifle, let an instructor know, and we will work with you to determine a suitable, and safe, workaround.

The steps are:

1. Magazine Out
2. Bolt Back
3. Safety On
4. Chamber Flag In
5. Rifle Grounded
6. No One Touching the Rifle

Let's talk about these steps:

1. Magazine Out. Remove the magazine from the rifle.
2. Bolt Back. The bolt should be opened all the way, and if the rifle allows, it should be locked back.
3. Safety On. Make sure your rifle's safety is on.
4. Chamber Flag In. The chamber flag should be inserted into the chamber of the rifle after verifying the chamber is empty.
5. Rifle Grounded. The rifle must be laying on the ground, ejection port facing up, with the muzzle extended past the firing line.
6. No One Touching the Rifle. This includes shooters, instructors and the shoot boss. NO ONE touches the rifle.

Repeat after me [SHOOTERS ECHO]

Magazine out

Bolt Back
Safety on
Chamber flag in
Rifle grounded
No one touching the rifle

What questions do you have about making your rifle safe? Shoot Boss, do you have anything you'd like to add?

Ammo Malfunctions Framing

The discussion of Ammunition Malfunctions is an extremely important topic because of the possible danger involved. We need our shooters to be aware of these hazards, know how to identify them, and know how to safely correct the issue. There are three and ONLY THREE ammunition malfunctions we teach at this time. They are Misfires, Hang Fires, and Squibs. We do not teach mechanical difficulties such as stovepipes or failures to feed during the safety brief, as they are not safety-related issues.

We need to make sure we don't use terminology that our shooters don't know while teaching this block. Do not discuss how a round is constructed, (primer, powder, etc.). It's information the shooters don't need and it wastes time.

If your shooters learn nothing else from the discussion of ammunition malfunctions, they should know that if a round doesn't go off, wait 30 seconds before ejecting it. If something doesn't feel or seem right have an instructor assist them in making sure they haven't experienced a squib.

Ammo Malfunctions Example

Shooters Center Up!

We are going to cover ammunition malfunctions. Some can be potentially dangerous. Three are important to us MISFIRES, HANGFIRES AND SQUIBS.

- MISFIRE: A misfire is a round which simply does not fire- you've squeezed the trigger, and you get a "click", instead of the expected "BANG!". There are two potential causes for misfires- a problem with the ammunition, or a problem with the rifle. If you experience a misfire, we ask that you wait 30 seconds, with the muzzle in a safe direction, before ejecting the 'dud' round. If you are experiencing persistent misfires, first try changing ammunition; if the misfires continue, your rifle may be overdue for maintenance. Ask an instructor for help, as we may be able to assist you in correcting this issue.
- HANG FIRE: A hang fire is a round that has a pronounced delay before it ignites. A hang fire presents itself exactly like a misfire- you've squeezed the trigger, the rifle goes "click", and then, a few seconds later- BANG! This delay between squeezing the trigger and the round igniting can be dangerous; if the round were to ignite after you've ejected it, serious injury may occur. This is why we ask that you wait 30 seconds with the muzzle in a safe direction before taking

any corrective action with a misfire. If you experience a hangfire, immediately discontinue use of the ammunition, and inform an instructor of the situation.

- SQUIB: A Squib occurs when the cartridge fires but the bullet has not exited the barrel. A squib is an extremely dangerous situation. Firing a second round with an obstruction in the barrel could be catastrophic.
- You can often identify a squib because it may have less sound and recoil than normal, or you may have excessive smoke blowing in your face. If you believe that you have experienced a squib, make your rifle safe and have an instructor assist you in checking your barrel for obstructions with a cleaning rod. If you *have* experienced a squib, immediately discontinue using that ammunition, and seek the assistance of a competent gunsmith to remove the projectile from the barrel.

[TPI] To review, what is the difference between a misfire and hangfire?

What questions do you have about ammunition malfunctions? Shoot Boss, do you have anything you'd like to add?

Chapter 8: Medical Emergencies

Medical Emergency Interview

Unlike most chapters in this text, this chapter is the transcript of the Appleseed Academy interview about Planning for Medical Emergencies. It's a little different, but important enough we wanted to include it here. Text is colored so you can easily track the discussion.

Hi, SteelThunder, thanks for taking the time to talk to me today. One topic that we don't often talk about is how to handle medical emergencies at a Project Appleseed event. I know you've been a Shoot Boss for a number of years and you mentioned this is something you've been interested in and have spoken to quite a few people about. I was hoping you could share a bit about what you've learned with us.

Q: So, first, why is it important for us to think through having a medical plan?

A: For most of us, the last thing we want to see is a medical emergency at an event. It's easy to ignore something unpleasant, but, if a serious emergency happens, the last thing you want to happen is that your mind goes blank…sort of like a computer saying, "File Not Found".

Q: What kind of emergencies are we talking about?

A: Fortunately, as of 2021, Project Appleseed has never had a serious firearms accident. However, it's more likely to have other issues, like cuts, burns, bone breakage, heat exhaustion or pre-existing medical conditions of our participants. And statistically, even with our stringent safety protocols, there is always the possibility that we could have a serious accident with a firearm.

Q: Wow, yes, I can see that there could be any number of issues that arise during one of our events. So, what should instructors be thinking about in case an emergency happens?

A: Preparation is the responsibility of ALL instructors, not just the Shoot Boss. Even so, the ultimate responsibility for the safety of the event rests with the Shoot Boss. So, you prepare by following three steps: 1) Have a Plan, 2) Be Ready for Action and 3) Follow up.

Q: Tell me what's involved in the first step, "Have a Plan".

A: Arguably, this is the most important step. First, assign emergency responsibilities for the event. At minimum, you should have 4 roles defined: 1) Emergency Team Lead, 2) Caller, 3) Runner and finally 4) Second in Command. All of these should be identified during the Saturday morning Instructor Meeting. It's also a great idea to have backups for each of these.
Review the Medical Plan with the students and instructors at the beginning of each day. In addition, I always invite students to talk to me privately if they have a medical condition that they want someone to be aware of, but don't want to publicly declare.

Q: Can you describe what each of these roles do?

The Team Lead should be a person who has the most advanced medical training. You should also ask during the Saturday Morning Welcome Speech to see if you have a student with more advanced training than a volunteer. You might get lucky and identify a doctor or a nurse, but it

is relatively common to find people who are EMTs, paramedics, or have some other advanced first aid. Obviously, the person has to agree, but in over a decade of doing this, I've never seen someone refuse.
The Caller is responsible for calling first responders and should be someone that has good cell phone reception at the range and can keep their phone charged.
The Runner is responsible for going to the entrance of the property and leading first responders to the scene.
Finally, the Second-in-Command's job is to take over the firing lines and ensure that everyone, including those not attending the Project Appleseed event, stops shooting and secures their firearms.

Q: So, at that point, you seem pretty prepared.
A: I agree, but now you need to be ready for the unexpected. I've talked to a lot of Shoot Bosses and instructors to try to uncover some best practices. Here's what I've found:
Medical equipment: Many in our cadre have constructed a trauma kit that they keep with them whenever they are at the range. You can buy a pre-made kits or build one yourself. The trauma kit should be marked clearly and ONLY be used by the Team Lead. If the range has an Automated Electrical Defibrillator (AEDs), make sure the team knows where it is.
Also, many Shoot Bosses keep a "boo-boo box" that has basic first aid supplies and should be used for the inevitable minor bumps and scrapes at the event. Don't forget to make sure there is hand sanitizer, a hand washing station and fresh drinking water.
Communications: Many Shoot Bosses keep inexpensive FRS or GMRS radios in their kit so the Runner and Shoot Boss can stay in contact. Other Shoot Bosses keep a script for the Caller so they know what to say when they call 911.

Q: Any advice on what to say to the 911 dispatcher?
A: I interviewed two 911 dispatchers and they gave me some tips for the Caller:
You should describe the emergency and the condition of the patient as concisely as possible. "Someone is unconscious" isn't helpful. "A middle-aged male became overheated, passed out, isn't sweating and doesn't seem to be breathing" is much better.
The Caller should stay with the patient. Also, stay on the phone – you will be asked to keep the dispatcher informed of exactly what is happening.
The Caller should have a script with the name of the facility, an exact address, and even GPS coordinates.
Only have the designated Caller or their backup call 911. If everyone starts calling, it can delay getting first responders to the scene.
If someone knows the person with emergency, ask them if they know of any other medical issues they may have.
If there is a firearms-related incident, our dispatcher advised that the Caller NOT blurt out "Someone got shot". First Responders may assume this is a hostile situation and will call the police to first to clear the area prior to medical personnel responding.
However, you can say "A person has a Training Accident or an Accidental Injury with a Firearm. All shooting has stopped and all firearms are secure. We need immediate help".
If the ambulance shows up prior to the police and there is still shooting going on at the range,

they may not enter the grounds. (Here's a Pro Tip: If there are multiple "hot" ranges at a range complex, we will need to contact the Range Chief RSO to have them shut down.)
Lastly, stay calm. The dispatcher will ask a lot of questions. They are doing their job and need this information to get the best care possible.

Q: That's some pretty heavy stuff to think about. I'm sure in all our years teaching events, we probably had non-firearms related health issues. What can we learn from those experiences?
A: I interviewed a couple of Shoot Bosses that have been through a medical emergency at a shoot. Here's some of their comments:
Think through your plan and different scenarios BEFORE a shoot. Visualization of your actions during a situation is almost as good as actually doing it.
No matter how fast first responders get there, it will seem like forever. Assume you are on your own and be prepared to wait 30 minutes.
Try to think ahead. What happens if the person goes unconscious? If we need to evacuate them ourselves because of issues with the ambulance, how will we do that?
Your plan will likely fall apart. That's OK – Improvise, Adapt and Overcome.
Spend a little time researching Good Samaritan Laws. All 50 states have some form of Good Samaritan Laws. These laws protect people from what is called "ordinary negligence" or the failure to act with the same care as a reasonably prudent person would under the same circumstances. They don't protect you against "gross negligence" or willful actions, which is a voluntary disregard of reasonable care. In other words, you should do what you are comfortable doing and nothing more.

Q: Wow. Once it is all over, what should you do?
A: The biggest thing is to document everything and follow up.
Write down a timeline of what happened, what was done, and the outcome. Do this as soon after the incident as possible while memories are fresh. Get several people to do this and compare notes.
Notify your State Coordinator as soon as possible. They will help coordinate communication with the Regional Coordinator and National Coordinator. Our National Coordinator will contact the AOC.
The Shoot Boss should contact the club representative and/or the Board as soon as possible and inform them of what happened. They will likely want a report.
Check on the patient and send a get-well card.
Save and file all documents.

Q: Boy, that's a lot to chew on. Any parting words?
A: Sure. Even though the idea of handling a medical emergency is daunting, I think most of us would want to help one of our countrymen if they are in distress.
The best thing you can do is think through possible scenarios and have a plan. Stay calm and work the problem. Our first responders are dedicated people and a having solid plan will help them do their jobs.

Chapter 9: Line Commands

Line Commands Framing

Line Commands are verbatim material, which means they should be presented word-for-word. Changing the order, skipping, or adding steps or rules is not permitted. When first teaching the line commands, present them without the commands associated with the Transition Stages of the AQT. Those commands should be given and demonstrated when transition stages are taught.

Teach Line Commands using the "List / Explain" format. After listing the Line Commands, follow up with a brief explanation of each command, kept simple and precise. While the line commands themselves are verbatim, the explanatory information is not. When presenting this information to the shooters, you should avoid the use of technical terms or jargon. Also, avoid discussing or explaining things that are not immediately related to that specific line command. The first time the line commands are presented at a given event, references to Natural Point of Aim, or dry fire, should be omitted, as those instruction modules have typically not been presented yet.

To maximize safety, Line Commands should be spoken loudly and with authority. Use your "outside voice". Also, the Line Boss should deliver the commands with a cadence that allows him or her to be heard and understood by the shooters. This cadence will also help keep the Course of Fire running on time.

A note for Appleseed volunteers: Only the commands "Load!", Fire!", and "Cease Fire! Cease Fire! Cease Fire" will be echoed.

The example below omits the special line commands for tube fed rifles. To avoid feeding the Time Monkey, tube fed rifle commands should be shared one-on-one with those shooters.

Line Command Example

Shooters, center up! In just a few minutes we will begin shooting. To prepare for that I will teach you the Line Commands we use to let you know what will happen next. These commands are given by the Line Boss and are critical for our safety. They must be obeyed. Please pay close attention as I list them, and then I will explain them.

- Shooters! Your Preparation Period Begins Now!
- Shooters! Your Preparation Period Has Ended!
- With X Rounds, Load!
- Is the Line Ready?
- Ready on the Right?
- Ready on the Left?
- All Ready on the Firing Line!
- Fire!
- Cease Fire! Cease Fire! Cease Fire!

- Unload and Clear!
- Is the Line Clear on the Right?
- Is the Line Clear on the Left?
- The Line is Clear! The Line is Clear!
- Shooters, You May Proceed Downrange to Check Your Targets!
- Stand Easy!

Let's talk about these commands.

- **Shooters! Your Preparation Period Begins Now!** At this point you may come to the firing line and handle your rifle in any safe way. You may sling up, remove your chamber flags, get into position, make sight adjustments. You can do anything EXCEPT insert a magazine, or load your rifle.
- **Shooters! Your Preparation Period Has Ended!** This is notice to you that we are about to begin a string of fire. You should now be prepared to shoot the String of Fire, with your prepared magazines ready at hand.
- **With X Rounds, Load!** Upon hearing the load command, you may insert your prepared magazine into your rifle and chamber a round. You should be in position, ready to shoot when given the command.
- **Is the Line Ready?** If you are ready, you should not do or say anything. If you are NOT ready because there is a safety issue (for example, missing hearing protection) raise your hand or shout "NO!" We will pause long enough to correct the situation. If you are not ready because you are slow – speed up.
- **Ready on the Right?** The Line Boss will look to the right for anyone not ready.
- **Ready on the Left?** The Line Boss will look to the left for anyone not ready.
- **All Ready on the Firing Line!** The Line Boss has declared that all shooters are ready to begin the string of fire- and that there are no known safety hazards.
- **Fire!** At the fire command, you may begin your string of fire. Please focus on shooting YOUR OWN TARGET and not someone else's. You may continue to fire until you have fired all your rounds, or you hear the next command, which is…
- **Cease Fire! Cease Fire! Cease Fire!** This is the most important command of the day, and you need to be listening for it. When you hear it, stop firing IMMEDIATELY! It is a red light, not a yellow light. The Cease Fire! command may happen at any point during a String of Fire, and you may not know the reason. It could be a sudden safety issue. So always listen for this command and take your finger off the trigger immediately! Flagrant violation of the Cease Fire! command will see you removed from the firing line.
- Also, EVERYONE "owns" the Cease Fire! command. If you see something that might even come close to a safety issue, call out loudly "Cease Fire!" three times. There is no harm if you are mistaken. The harm is if someone gets hurt.
- **Unload and Clear!** This is the time to make your rifle safe, collect all your equipment except your mat, rifle, and sling, and move back behind the Equipment Line. At this point, the RSOs will begin clearing the line. Please do not engage them in conversation while the clearing process is going on. Let them do their job.
- **Is the Line Clear on the Right?** The Line Boss will look to the RSO on the right for a thumbs

up signal that the right side of the line is safe.

- **Is the Line Clear on the Left?** The Line Boss will look to the RSO on the left for a thumbs up signal that the left side of the line is safe.
- **The Line is Clear! The Line is Clear!** This means the line is clear- all rifles have been inspected, and are in a "safe" condition. From the moment the line has been declared "Clear", to the moment the next preparation period begins, NOBODY is to touch or handle a rifle.
- **Shooters, You May… (Proceed Downrange to Check Your Targets!)** This final line command varies, depending on what the next activity will be. The majority of the time, you will be instructed to proceed down range to check, score, remove or post new targets. Other times, we may forego going downrange altogether, and will move directly into the next course of fire. You may not proceed down range unless explicitly authorized to do so.
- **Stand Easy!** You will only hear this command if there is a sudden problem BEFORE the FIRE! command is given. This command temporarily puts the line on hold. Just wait patiently, listening for the line to resume.

What questions do you have about LINE COMMANDS? Shoot Boss, do you have anything you'd like to add?

Chapter 10: Line Boss, RSO, & LSO Duties

Line Boss Duties

The LB is in charge of the firing line whenever there are rifles on the line. The LB has two primary responsibilities while serving in this capacity:

- First, the LB is tasked with the safety of the line at all times.
- Second, the LB is tasked with keeping the event running on-time.

The LB is charged with watching the line at all times for safety issues and to announce the COF. The LB must never leave the line unattended. While the other Instructors will always be where the shooters are, the LB will never leave the line unless relieved of that duty by another Instructor. The LB must have the "big picture" as his/her focus and does not instruct during the time that he/she is tasked with the LB duties. Distractions from other Instructors should always be kept to a minimum when a LB is at their station. A LB can be any RH or OH. Even a fresh OH may be tasked with this duty, and should be! Of course, a prudent SB will be nearby for immediate help or have an experienced RH shadowing the IIT.

An effective LB should have the COF from the SB for referral when announcing the next SOF or instruction block. Remember that second task for the LB! Keeping the shoot moving at a reasonable pace is very important!

There are two items that a LB should always have on them: a printed copy of the line commands, and a means to time the event. (Preferably a stopwatch.)

The Line Commands will be given only by the LB. They will be the standardized line commands, and they must be given verbatim! It is important to note that a good LB will be heard clearly by everyone, and therefore, the LB should "project" their voice and avoid yelling the commands and possibly straining their voice. If the line is long enough other instructors may echo these, and only these, line commands: "Load!", "Fire!", and "Cease Fire!" Of course, the "Cease Fire!" command is owned by all. If there is a safety issue the line can be shut down by anyone with the "Cease Fire!" command. To emphasize, the commands Safeties on! and Stand! are NOT to be echoed.

The LB will designate the RSOs and, if necessary, the LSOs. The LB will also designate the overlap rifle, or rifles, for the RSOs to clear the line. The LB will be watching as the line is being cleared by the RSOs to assure that no one else touches rifles after the RSO passes that area.

Range Safety Officer Duties

The RSOs, or Range Safety Officers, can be other Instructors, IITs, or qualified Applecore Volunteers. Once the "Unload and Clear" command is given the RSOs should immediately proceed to clear the line. It is very important that the Instructors who are serving as RSOs learn to "flip the switch" and understand that they must pause their duties as instructors until they have completed the vital task of clearing their respective sections of the line. The clearing of the line must be done in a methodical manner and thoroughly. Each RSO must start clearing

their section of the line from the designated overlap rifle. They must work from the center of the line to the outside of the line, clearing each rifle as they progress to the end of the line. Once each rifle on their section is confirmed to be cleared, they will then wait at the outer rifle while facing the LB until the LB asks "Is the line clear on the right?" "Is the line clear on the left?" The RSOs will indicate a "thumbs up" once they have been questioned about their respective side. Once the LB declares "The Line is Clear!" the RSOs can now "flip the switch back" and return to their Instructor duties.

Line Safety Officer Duties

LSOs, or Line Safety Officers, have a duty that is identical to the RSOs. LSOs would be used when there is a sufficiently long enough line that clearing it would take too long using only two RSOs. If the LB or SB determines that LSOs are necessary, the LB will then divide the line amongst the 2 LSOs and the 2 RSOs by designating a total of three overlap rifles. Let me show you a quick diagram of this method using this whiteboard:

As you can see, the line has a center overlap rifle, and another overlap rifle on each side of the line. The left side LSO will clear from the center overlap rifle out to the left side overlap rifle. At the same time, the left side RSO will clear from the left side overlap rifle out to the left end of the line. The same method is used on the right side for that LSO and RSO. Once the LSO has cleared from the center overlap rifle to the left side overlap rifle, he/she will face the left side RSO and indicate the "thumbs up" to that RSO while the RSO faces the center of the line and the LB. Again, each RSO and LSO will remain at their respective spots until the LB declares "The Line is Clear!"

Chapter 11: Introducing Targets

Hits Count Target Framing

The Hits Count target, also known as the Redcoat target, is the first and last target the shooters will shoot at each Appleseed. It's a simple target consisting of four red silhouettes representing targets at distances of 100, 200, 300 and 400 yards, and a square called "Morgan's Shingle", representing a shingle at 250 yards. The Redcoat target is used to determine the baseline of a shooter's abilities, before instruction – and we shoot another at the end of the day to show them their progress.

Describe the course of fire to the shooters in a clear manner, while holding the target up for them to see. Point out each differently-sized silhouette while explaining what distance they represent. Pointing to the shingle and mentioning the history of Morgan's shingle is a good way to enforce that we're looking for marksmanship from each of the shooters.

Once described, inform the shooters that they are to fire on the target from the prone position, three rounds per silhouette with one shot at the shingle for a total of 13 rounds. Ask for questions, and then have the Line Boss put the shooters in prep.

When the course of fire is complete and the line is made safe, the shooters should center up so that the Shoot Boss can tally their hits. The smallest silhouette with three hits determines that shooter's maximum effective range.

When scoring this target, it's unnecessary to ask if folks cleared the target if there were no hands at 400 yards or Morgan's Shingle.

Hits Count Target Example

Shooters! Listen up! [Hold up a Redcoat target]

This is the Hits Count target. We call it Hits Count because there's no scoring rings. Every shot is a hit or a miss. It's also known as the Redcoat target – you can see where that name came from.

There are four silhouettes, representing a man-sized target at 100, 200, 300 and 400 yards. There's also a little rectangle, "Morgan's Shingle", which represents a shingle about 7" wide at 250 yards.

We shoot the Redcoat target at the beginning of every Appleseed. It is a great way to start the day and a good way to see how well you're shooting this morning. We will shoot another one at the end of the day so you can see how much you've improved.

We're going to shoot three rounds per silhouette [point to each one] three, three, three, three – and then you get one shot at the shingle. All in all, 13 rounds. [TPI] What might that symbolize? That's right, 13 colonies!

But why do we shoot 3 rounds per silhouette? Well, one hit could just be an accident. Two?

Well, that might be coincidence. But three hits? That's an indicator of your maximum effective range!

"Morgan's Shingle" is named after Captain Daniel Morgan. The Virginia House of Burgesses commissioned him to assemble a group of Rifleman. You had to be an excellent marksman to join his company. The test to join his company as a Rifleman was to hit a cedar shingle with a cold bore shot. If you didn't make the shot, you could still join him, but as a cook.

We're going to shoot the Redcoat from the prone position, and we're going to give you plenty of time to do it. Once we're done, we will gather around again and see how everyone did.

We want you to take your first cold bore shot at Morgan's Shingle. After that, engage the closest (largest) target first and work your way down the page.

What questions do you have about the Redcoat target?

[Line Boss starts the preparation period – shooters begin course of fire]

[After the course of fire is complete, the line is cleared and everyone retrieves their target]

Shooters! Center up for scoring!

I want you to raise your hand only once.

Did you get all three rounds in or touching the 400 yard silhouette?

[count 400 yard shooters] 400 yard shooters! Good job! Please don't raise your hand again.

Did you get all three rounds in or touching the 300 yard silhouette?

[count 300 yard shooters] 300 yard shooters! Good job! Please don't raise your hand again.

Did you get all three rounds in or touching the 200 yard silhouette?

[count 200 yard shooters] 200 yard shooters! Good job! Please don't raise your hand again.

Did you get all three rounds in or touching the 100 yard silhouette?

[count hands as 100 yard shooters] 100 yard shooters! Good job!

Now, everyone can raise their hands again.

Okay, now, who hit Morgan's shingle and would be joining him as a Rifleman?

[count shingle hits] That's great shooting!

Did anyone clear the target?

[Count clear] Outstanding!

Shoot Boss, the shooters are ready for you!

AQT Framing

The AQT is the test at the end of a standard Appleseed rifle clinic. The shooter's score on the AQT determines whether he or she has earned the coveted Rifleman Patch. The target consists of four stages, each stage consisting of one or more silhouettes represented at 100, 200, 300 and 400 yards.

We frame the AQT with energy and enthusiasm, but not the stages. Introduce each stage immediately prior to shooting that stage. Don't tell them all four stages when announcing the AQT as that is info overload that will all be forgotten anyway.

Stages should be presented in the following manner. If you happen to have a mental lapse (and it happens to all of us from time to time), remember – the details to brief the stage are on the AQT itself.

1-Announce the stage
2-How it is shot (position / transition)
3-Round count (Holes in paper)
4-Time
5-Mag Prep
6-Extras – how to succeed

One-on-one, coaches should inform shooters with tube-fed rifles to load 11 rounds for the transition stages and eject the third round instead of changing a magazine.

Each stage should be briefed crisply. After the first couple AQTs, the helpful tips may be dispensed with. Instead, use TPI to ask the shooters about holes in paper or time for a stage.

AQT Example

Shooters, listen up!

The storied AQT! The Appleseed Qualification Test. Invented by the Army after WW1 and abandoned about mid-Vietnam. The AQT is intended to stress the shooter with time limits, transitions and mag changes, separating the riflemen from the cooks! Four stages / three positions – standing, sitting and prone. A score of 210 or more out of a possible 250 makes you what the Army calls "expert." Here at Project Appleseed, we call it "Rifleman" and it earns you one of them coveted patches for bragging rights later on!

Stage 1
Shooters, listen up!
We will be shooting Stage 1 of the AQT, which represents a full-sized target at 100 yards.
Start in standing, shoot in standing
Ten rounds in the top silhouette
Time: two minutes
Mag prep: one mag, ten rounds
The key to this stage: Find your NPOA and don't move your feet. Ten round mag in your trigger

side pocket. Remember to rest between every two or three shots – finger off the trigger.

Stage 2
Shooters, listen up!
We will be shooting Stage 2 of the AQT, which represents a full-sized target at 200 yards.
Standing to sitting
Second row of silhouettes, 5 & 5
Time: 55 seconds
Mag prep: 2 mags / 2 & 8
The key to this stage: NPOA, effective shifting, and Rifleman's cadence. Mags stay on the mat until you are in position. Fire two rounds then load the eight round mag.

AQT Stage 3
Shooters, listen up!
We will be shooting Stage 3 of the AQT, which represents a full-sized target at 300 yards.
Standing to prone
Third row of silhouettes. 3-3-4
Time: 65 seconds
Mag prep: 2 mags / 2 & 8
The key to this stage: NPOA, effective shifting, and Rifleman's cadence. Mags stay on the mat until you are in position. Fire two rounds then load the eight round mag.

Stage 4
Shooters, listen up!
We will be shooting Stage 4 of the AQT, which represents a full-sized target at 400 yards.
Start in prone, shoot in prone
Fourth row of silhouettes 2-2-3-3
You will have 5 minutes for this stage
Prep one magazine of 10 rounds
The key to this stage: NPOA, effective shifting, and Rifleman's cadence.

Note: The first time you brief this stage, you may find it advantageous to detail the steps a shooter needs to take for the stage. For example, during Stage 2, you might say, "When you receive the Fire! command, drop down into position. Once you are in position, load the 2 round mag. Engage the left silhouette and fire two rounds. Then, load the 8 round mag. Fire three rounds in the left silhouette, do an effective NPOA shift to the right silhouette, and fire your remaining five rounds into it." The other stages are similar. The key is to find brevity in simplicity and precision.

After you've given them this instruction once, there is rarely a need to feed the time monkey by repeating it. Just brief the stage crisply and move on.

Chapter 12: Eye Dominance

Eye Dominance Framing

It's important for each instructor to articulate why eye dominance matters and explain how shooters can manage it. By teaching about Eye Dominance early on Saturday morning, we are proactive in identifying those shooters with challenges.

A shooter's brain has a dominant hand that the brain prefers to do tasks with. He also has a dominant eye, the eye the brain prefers to receive inputs from. Shooting is a task that can be challenging for someone that is cross-eye dominant, meaning their dominant hand and dominant eye are on opposite sides. As instructors, this is something we need to be aware of when coaching shooters.

If we have a cross-eye dominant shooter, we prefer to have them shoot from the side of their dominant eye. Not everyone can do that, especially if they've been shooting for many years. For those shooters, block or restrict their vision from the dominant eye with translucent tape over the lens of their shooting glasses.

With the help of my model, CorgiMom, we will demonstrate what this block of instruction should look like.

Eye Dominance Example

Shooters, center up! Let's discuss eye dominance!

Just like your brain has a dominant hand that it prefers to do tasks with, it also has a dominant eye. Your dominant eye is the eye the brain prefers to receive inputs from. Because shooting is so dependent upon vision, we are going to learn which eye is dominant.

There is a simple way to see which of your eyes is the dominant eye. Extend both your arms, bringing both your hands together to create a small circular opening. Then, with both eyes open, view a distant object through the opening. Slowly draw the opening back towards your head to determine which eye is viewing the object. The eye the opening ends up in front of is your dominant eye.

If your dominant eye is not on the side of your dominant hand, you are cross-eye dominant.

Now, what should we do with this information?

If your dominant eye and your dominant hand are on the same side of your body, do nothing. That should be your trigger side.

If you are cross-eye dominant, we recommend you shoot from the side of your dominant eye. This is the best option for all shooters, especially new ones.

However, not everyone can do this, especially those of you that have been shooting for years. Therefore, you may find it helpful to obscure the vision in your dominant eye. Placing some translucent tape over your glasses on the dominant side will help you successfully use your non-dominant eye to shoot.

Shooters! One additional note about vision. How many of you are wearing progressive lenses today? Shooters wearing progressive or no line bi-focal lenses will need to take extra care to look through the same spot in their lenses while shooting. We want your vision to be consistent every time you get behind your scope or iron sights. There are special shooting glasses that can help with this, but you won't need them for this class.

What questions do you have for me about eye dominance? Shoot Boss, is there anything you'd like to add?

Chapter 13: Sling Use

Sling Instruction Framing

In 1921, the American team, the only team using slings, came from far behind to beat the Swiss who had won the World Shooting Championships for 17 of the last 18 years. Since that time slings properly donned have become a necessary implement for the best marksmanship. Slings instill confidence in shooters and help them achieve maximum stability.

At Appleseed, we teach three different sling configurations: Hasty-Hasty, Hasty, and Loop. The USGI sling, which we recommend, can be used in all three and, when properly donned, will substantially steady the rifle and increase your accuracy.

Sling Instruction Example

Shooters, center up for instruction!

We will demonstrate how to properly don a sling to improve your marksmanship. We strongly recommend the use of the cotton US General Issue sling because it is inexpensive, lightweight, and will substantially steady your rifle and increase your accuracy. However, other slings can be effective as well. We will share with you three methods for using a sling.

Hasty-Hasty Sling

The first method we refer to as the "Hasty-Hasty" sling, which is connected to the rifle at the front and back. Although we don't use it at Appleseed clinics, it can be useful if you need to quickly employ your sling to increase rifle stability for shooting.

Our model, for example, is walking through the woods, carrying the rifle with both hands with the sling hanging below it. Suddenly that trophy buck appears.

By quickly moving the rifle in a circular fashion to the support side with the rifle tilted at about a 45-degree angle, the sling comes outside the support elbow, which is then raised to put tension on the sling.

Hasty Sling

The second method is the "Hasty" sling, which is also connected to the front and back of the rifle.

Holding the rifle horizontally, use the keeper to adjust the sling length to about one spread hand's width from the trigger guard to the sling.

To don the hasty sling, you hold the rifle vertically, at the grip, and raise it with your trigger hand so you can look though the trigger guard.

Next, you insert your support arm through the sling all the way up to your armpit.

You will then raise the rifle, which is still vertical, until the J hook is firmly in the armpit, under tension.

While maintaining upward tension in the sling, you then reach around the sling with your support hand and place it between the sling and the forestock from the support side and grasp the forestock.

Next, you release your trigger hand from the grip, grasp the butt of the stock, and rotate the rifle, bringing the stock up to your face and the butt of the stock to a point high on your shoulder.

As you rotate the rifle, the sling slides smoothly in your armpit and lays flat across your chest.

After placing the rifle on your shoulder, you release the butt stock and re-grasp the rifle at the grip again.

The sling should remain high in your armpit, be snug, and form part of a good triangle with the upper arm and forearm. Your support elbow should be under the rifle, forming a sharp V, and your support hand should be flat and relaxed under the rifle.

Loop Sling from Cross Leg

The final method is the "Loop" sling, which is connected only to the front of the rifle. The USGI sling is ideal for this configuration and provides maximum stability. There are two different ways of donning the Loop sling: from cross-legged or kneeling positions.

First, our model will use the Cross-legged sitting position.

Keeping the muzzle down range, place the rifle across both thighs with the trigger guard facing you.

Remove the J-hook from the butt of rifle and place the stock under your trigger thigh and lay the fore stock across the support thigh.

Extend the sling along the length of the rifle.

Pull the webbing from the CENTER of the H-buckle to form a loop large enough to insert your Support arm.

Grasp the top of the loop with your trigger hand and extend the sling towards the butt of the rifle, ensuring the sling is flat and has no twists and the J-hook points toward the stock. Rotate the sling 180 degrees with J-hook coming over the top until the J-hook points towards you. Insert your Support arm through the loop until the loop is high in the armpit.

Reach over your Support arm with your Trigger-side arm and cinch the loop snug. Make sure the J-hook is on the outside of your Support arm.

Rotate your Support arm around the outside of the sling and grip the fore stock. Get in your shooting position and adjust the sling length as necessary. Note that the sling and arm form a triangle.

Using this method, the muzzle stays downrange and both hands are free to work with. But

sitting may not be easy for some people, so Kneeling is another option.

Loop Sling from Kneeling

Our model will now remove the sling, reattach the J-hook, stand up, and demonstrate how to don the loop sling from the Kneeling position.

Kneel on both knees and place the rifle butt on the ground between your knees with the rifle barrel leaning against your trigger side shoulder.

Use your trigger side arm to keep the rifle against your body.

Next, remove the J-hook from the rear swivel.

Pull the webbing from the CENTER of the H-buckle to form a loop large enough to insert your Support arm.

Look down at the sling while it hangs flat and straight down. Rotate the loop one quarter turn (90^{o}) to your trigger side, insert your Support arm until the loop is high in the armpit.

Reach over your Support arm with your Trigger-side arm and cinch tight the loop.

Get in your shooting position and adjust the sling length as necessary.

Using the Kneeling position is easier for some, but the muzzle is close to the head and ear and not downrange.

For either method, to remove the sling, the steps are the are the reverse of getting into it. Model, thank you!

What are your questions about using a Sling? Shoot Boss, is there anything you'd like to add?

One special note about the loop sling: only teach one method to the shooters, but instructors should be prepared to teach both.

Chapter 14: Natural Point of Aim

Natural Point of Aim Framing

Natural Point of Aim is the most important marksmanship topic we cover in a Project Appleseed weekend. Due to the nature NPOA, the shooters should have already heard about Steps 1-3 of Firing a Shot, because verifying NPOA happens during Step 3. Some Shoot Bosses prefer to teach this as a stand-alone block of instruction because NPOA is independent of any particular shooting position. Some prefer to teach NPOA while teaching prone. Either is fine.

Also, there are several optional NPOA demonstrations that can be conducted with a dummy stock with a laser. Where and how to employ them is a matter of shoot boss discretion.

For simplicity, I will cover NPOA as a stand-alone block of instruction as this is what every Instructor should be able to teach with confidence. When we break down the topic of Natural Point of Aim, three major points are revealed:

- Define NPOA
- Explain how to get NPOA
- Explain how we verify NPOA

Let's talk about those three points:

- First, what is NPOA? NPOA is where the body, completely relaxed, will place the shot.
- Second, what is required to get NPOA? While holding the rifle, the body must be completely relaxed and relying on bone support. It's that simple.
- Third, how do we verify NPOA? With a relaxed body and sights pointed at the target we tell shooters to do the following three steps:
  - First-Close your eyes
  - Second-Take a deep breath and let it out
  - Third-At your respiratory pause, open your eyes

If the shooter's sights are still on target at the respiratory pause, he should take the shot using the rest of the 6 Steps. If sights are not on target, the shooter should shift his body and rifle as a complete unit until he is on target and then repeat the process.

Instructors: do not overthink or over teach this process. If you keep it short and simple, your shooters will absorb it better. Occasionally, a shooter will understand what we're asking to do, but still struggle. Some potential reasons for struggling include:

- Conscious muscling. Conscious muscling is when the shooter is deliberately trying to force the sights onto target
- There's also subconscious muscling. This results from a preoccupation with the target instead of the front sight. The brain is trying to muscle sights on target for the shooter
- Finally, equipment issues. An improperly adjusted sling or a rifle that's poorly fit to the shooter will cause a shooter to struggle with NPOA. The shooter is fighting the rifle or sling and

can't get comfortable enough in position to relax.

Natural Point of Aim Example

Shooters, center up! This morning, I'm going to share with you the most important thing you will learn this weekend about marksmanship, Natural Point of Aim or NPOA. NPOA is the single most important factor in precision shooting. It will enable you be consistent and repeatable in your shooting with far less effort.

So, what is NPOA? Simply put NPOA is the place where your body, completely relaxed, will place the shot. Your body will be most relaxed at the end of a normal exhale.

NPOA requires bone support, not muscle support. Muscles are the enemy of precision marksmanship. To get the bone support you need, you must completely relax your body to eliminate muscle input. The process of obtaining NPOA is linked to the first 3 Steps of Firing the Shot.

To begin, get in position with your rifle and completely relax your body. Your sights are now ideally on your NPOA. Place your NPOA on target by shifting your body and rifle as a unit about its pivot point until you have a good sight picture, while relaxed.

To verify your NPOA is on target, do these three steps:

- One - Close your eyes
- Two - Take a deep breath and let it out
- Three - At your respiratory pause, open your eyes

If you are on target, great! You are ready to take the shot. If not, shift your body and rifle as a complete unit until you are on target and then repeat the process to verify. The more often you do this, the easier and quicker the process will become.

What questions do you have about Natural Point of Aim?

Okay, I am going to call out the steps to verify NPOA and I'd like you to repeat them. With your body relaxed:

One? Close your eyes [TPI: Close your eyes]
Two? Take a deep breath and let it out [TPI: Take a deep breath and let it out]
Three? At your respiratory pause, open your eyes [TPI: At your respiratory pause, open your eyes]

Shoot Boss, is there anything you'd like to add?

Chapter 15: Six Steps of Firing the Shot

Six Steps of Firing the Shot Framing

This is the most complex and difficult instructional component that a shooter has to learn. It should be presented early Saturday and chorused early and often to enhance memorization.

The 6 Steps of Firing the Shot requires that you, as an Instructor, know each of the 6 Steps in order and verbatim. When teaching the 6 Steps of Firing the Shot, you should first state the 6 Steps and then go back through each step with a complete explanation. Then, have the shooters echo them back to you.

You can find flip charts on the forum to use as a visual aid when presenting this block of instruction. The flip charts are valuable and help our visual learners, so you should use them.

Let's discuss the Six Steps themselves.

1. Sight Alignment: When explaining sight alignment make sure you use flip charts to show a sample of the different sight configurations shooters might encounter. Before teaching the block, walk down the line and note what types of sights are in use. Don't discuss sight types which are not on the line. Assuming the Prone Position has already been taught, emphasize that a proper cheek weld will result in good Sight Alignment.

2. Sight Picture: Explain the difference between a Center of Target Hold and a 6 O'clock sight picture. Do not use the tactical term "Center Mass" to describe the former. We usually advise a center of target hold. Illustrate the differences between COT and 6 O'clock hold using a Hits Count Target or an AQT.

3. Respiratory Pause: It helps to refer to the chart with the breathing pattern diagram when you explain extending the natural respiratory pause and that's where we complete the firing the shot.

4. Focus/Focus: Emphasize that the eye can only focus on one distance so everything but the front sight should appear fuzzy.

5. Squeeeeeeze the Trigger: Explain that this is the longest word in Appleseed. Have an Appleseed-approved trigger training device (or retractable ball point pen) ready to illustrate the idea of holding the trigger back.

6. Follow Through: Explain that follow through has 2 parts when the shot goes off:

- part 1-Hold the trigger back long enough to think "follow through," and
- part 2-Call Your Shot, which means; take a mental snapshot of where the front sight or the crosshairs were when the shot broke.

The 6th Step is the most important of all six. It's where learning happens for observant shooters, even if it's a bad shot.

Six Steps of Firing the Shot Example

Center up shooters; this block of instruction is called 6 Steps of Firing the Shot. A Rifleman fires every shot by the numbers. There are 6 steps that must happen on every single shot for you to shoot consistent, accurately placed shots. The Six Steps are:

1. Sight Alignment
2. Sight Picture
3. Respiratory Pause
4. Focus
5. Sqeeeeeeze the Trigger
6. Follow-through

Let's talk about them:

1. Sight Alignment

Sight alignment does not refer to the sights on the rifle being aligned. It refers to having your eye correctly aligned with the sights. What sight alignment looks like on your rifle depends on whether you have iron sights or an optic.

If you have iron sights, your sight alignment could resemble one of these pictures. Note that regardless of the type, the front sight is always centered horizontally and vertically in the rear aperture or notch.

If you're shooting a scope, the crosshair will be exactly centered in the scope tube with no shadows or tunnel effect. The crosshairs should be very crisp. This indicates that your eye is correctly aligned with the scope tube and at the correct distance from the scope.

2. Sight Picture

Proper sight picture is achieved when you bring your aligned sights onto the target. There are two basic sight pictures we teach in Project Appleseed. (1) Six O'clock hold, also known as pumpkin on a post and (2) Center of Target hold. [Show with flip charts]

[Explain with two Redcoat Targets]

Observe these two targets. On the left you see an iron sight rifle using Center of Target hold. Look at the top silhouette. Using Center of Target hold, the sights are adjusted so when the iron sight is held at the center of the target, the rounds impact in the center. When this same hold is used, the point of aim equals the point of impact for targets of different sizes at 25m.

On the right, you see a rifle with iron sights using 6 O'clock hold. Look at the top silhouette. Using the 6 O'clock hold, the sights are adjusted so when the iron sight is held at the bottom of the target, the rounds impact in the middle. However, when we use that same hold on a different sized target like the bottom one without adjusting sights, it doesn't work so well. This is a rather dramatic example, but shows the effect. To successfully put rounds in the center of the target, the shooter must hold in a different spot which can be less precise or make a sight adjustment.

Each method has its advantages, but for iron sights we recommend a center of target hold so your point of aim should always coincide with your point of impact. However, there is certainly a benefit to the Six O'clock Hold: the front sight will not obscure your target, and it is more accurate for targets of equal sizes at 25m.

If you are shooting a rifle with iron sights, pick one method and stick with it today. Do not go back and forth.

For scopes, we always use Center of Target hold.

3. Respiratory Pause

You can't shoot accurately while you are moving. Breathing causes movement, so you will have to stop breathing at some point to make an accurate shot.

A normal human breath cycle lasts about 3-5 seconds. There is a natural pause between breaths and we call it the Respiratory Pause. During that Respiratory Pause, we want you to extend that natural pause an additional 1-2 seconds during which you'll complete firing the shot.

In the Prone Position, you will notice that as you inhale, the front sight will dip, and when you exhale, it will rise. Use the natural action of breathing to help hold the elevation. When the front sight reaches the desired place on the target at the Respiratory Pause, simply hold your breath briefly at that point.

How long can you hold your breath and expect good accuracy? In 5 to 8 seconds your vision begins to diminish. You won't be able to see as well as you'd like. You may even begin to tremble a bit. If you don't get the shot off within a few seconds, take another breath and start over.

4. Focus/Focus- this has two parts.

    4a. Focus Your Eye on the Front Sight

This is a physical activity. The eye cannot focus at more than 1 distance, and you are now trying to keep 3 things aligned. Years of shooting experience by thousands of riflemen have proven that the best way to aim your rifle is to focus on the front sight and not on the target. The target will be fuzzy in the distance and the rear sight will be fuzzy in your periphery. But this is the only way your eye can line up all 3 things accurately. It is imperative that you focus ONLY on the front sight.

Scopes will form an image of the target in the same plane as that of the reticle. Therefore, it is NOT necessary to focus only on the reticle although it may be advantageous to do so as the reticle is brought on to the target.

    4b. Focus Your Mind on Keeping the Front Sight on the Target

This part is a mental activity. Focus your mind on keeping that sharply focused front sight precisely where it belongs, on the fuzzy target. This will require a considerable amount of concentration and effort and is why the steps must be practiced, becoming automatic, leaving

the mind free to concentrate on the front sight and target.

5. Squeeeeeze the Trigger

The longest word in Appleseed. We say it that way for a reason. We want you to squeeeeeeze the trigger straight to the rear using a steadily increasing pressure.

By squeezing the trigger, you can stop at any moment if the sights wander off the target. If they do, DO NOT release the existing trigger pressure. Simply continue to hold the pressure you have until the sights return to the target, then continue squeezing the trigger. Repeat, as necessary, until the rifle fires.

Generally, the middle of the first pad of the trigger finger should contact the lower portion of the trigger. For particularly difficult triggers, it may be necessary to use the first joint of the trigger finger.

But regardless of which portion of the finger touches the trigger, the trigger must be SQUEEZED straight back to avoid inducing movement into the rifle before the shot fires. Furthermore, once the finger comes in contact with the trigger, it should not be removed from the trigger until the string of fire is completed.

6. Follow Through

Follow through has 2 parts when the shot goes off: Hold the trigger back. Call Your Shot.

6a. Hold the trigger back: Just as with squeezing the trigger straight to the rear, you must continue holding the trigger to the rear after the shot breaks, and long enough to allow the bullet to clear the barrel. Try to hold the trigger back until the sights are realigned on the target after recoil or long enough to think “follow through.”

When you begin to release the trigger pressure, release just enough pressure to reset the trigger. It is of utmost importance that the finger is not removed from the trigger.

6b. Call the Shot: In order to call the shot, you MUST keep your eye open as the shot is fired. This will enable you to take an INSTANT mental snapshot of exactly where the front sight was in relation to the target when the shot broke. Initially it will seem challenging to do but it will become easier with practice.

Remember, the only shot you waste is the one that you don’t know where it went. Call your shots.

[Use TPI and have the shooters echo the 6 Steps]

What are your questions about the 6 Steps of Firing the Shot? Shoot Boss, do you have anything you’d like to add?

Chapter 16: Six Steps – Advanced Concepts

Six Steps of Firing the Shot Interview

Unlike most chapters in this text, this chapter is the transcript of the Appleseed Academy interview about advanced considerations for teaching Six Steps of Firing the Shot. It's a little different, but important enough we wanted to include it here. Text is colored so you can easily track the discussion.

Corgimom: Hello, Gentlemen. Nice to see you here. We're going to have a discussion that's for Shoot Bosses about the Six Steps of Firing the Shot. Before we begin that, let's introduce ourselves for the viewers. I'm Corgimom from Cleveland, TN.
DonD: I'm DonD from Murray, Kentucky.
Ramblin' Wreck: I'm Ramblin Wreck from South Pittsburgh, Tennessee.

CM: So, between the two of you, you have hundreds of shoots and over twenty years of Appleseed experience. One of the most challenging blocks of instruction for shooters to absorb is the Six Steps of Firing the Shot. Ramblin' Wreck, could you tell us why you think that is one of the most challenging things?
RW: If you consider our audience, on any given day you're going to have people on the line who have never touched a firearm before all the way to people who are experienced shooters. Some of the terminology we're going to be using may be brand new to people who don't understand what sight picture or sight alignment is. You're giving people this firehose of instruction, as we tell them they're going to get. You're giving it to them all at one time and these are things that have to be done in a very specific order. Because if you get them out of order, they don't work! You can't squeeze the trigger before you have the sight picture and sight alignment. You're dumping all this on people in one block and you expect them to remember all of it. It just becomes a really challenging block. I think it is one of the most critical blocks and most difficult one for people to assimilate when we go through the morning of that first day.

CM: DonD, can you give us some guidance about what we can do to mitigate that firehose effect?
DD: Well, there is a firehose effect. In addition to all the other information we're supposed to learn quickly, we're faced with the rather lengthy Six Steps. When I was a student, I never could remember all these, nor could others. When I became a Shoot Boss, I began trying to think of ways to make it simpler. I finally came up with the idea of splitting the Six Steps into two segments: Steps 1-3 and 4-6 and having a practice session after each one of these. This has worked very well. It seems to imbed the Six Steps into the shooters' minds fairly quickly. I didn't really realize how quickly until a shoot I had in Tennessee several years ago. I had presented this process and then I asked the shooters what the Six Steps were. They hesitated. Well, I expressed a little good-natured disappointment. Finally, one of the ladies said, "Don, we can't give these to you verbatim, but we know what they are because you've been drilling them into us and had us practicing them so much." Well, that struck me like a thunderbolt and I've

never asked that question again since then. And another incident comes to mind, too. At the latest shoot I worked a few weeks ago, the shooters had gone to the target line examining their targets and looking at the results. I overheard one talking to another and he said, "Respiratory Pause". That was highly gratifying.
CM: Great.

CM: Okay, Wreck, how different is that for the Shoot Bosses to implement?
RW: It's not really difficult to implement because all you're doing is taking a break. You're teaching the first three steps, then you're taking a break and practicing the first three steps. Once you've done that, then you go back and do the next three steps. It's not really difficult to implement at all. It takes a little bit longer, but the only people who know there's something "different" are the more senior instructors who know that in the past we've done all Six Steps at one time. The shooters don't know any different. It's just business as usual for them.
CM: That makes sense.

CM: DonD, it sounds what you're both saying here is that the sequence of events on Saturday morning changes just a bit. So, can you tell us a little bit about what that would look like?
DD: After NPOA and the prone position are presented, we hold a practice session for the first three steps using 1" square targets and NPOA shifts. During this practice session, we have a time to better fit the rifles to the students so they'll be more comfortable during the entire event. This really helps many of the students.
Then we have a rather quick TPI review of the first three steps. Following this, we present the remaining steps. The practice session which follows this begins with a trigger control exercise. Then we have a dry firing session using all Six Steps and NPOA.
I also throw in another item at this point. We ask the shooters to observe carefully if the sights move off the target as the hammer falls and to make whatever corrections may be necessary to correct this. This is so important because it's something that cannot be seen during live fire. If live fire only is used, shooters can be making severe mistakes and not even know it. This results in poor shooting.
This whole process can be found in the Course of Fire in the appendix to the Instructor Manual.

CM: What results have you had with this method?
DD: The results are seen very quickly in live fire on the very first 1" square that we shoot. The groups do not begin large and start shrinking then as they do using the traditional method. They start out small to begin with. In fact, they are in the region generally of 4 MOA to 8 MOA. There are some exceptions. Instructors who see this method for the very first time in use are just totally shocked at these results.

CM: Have you had results, Wreck?
RW: Yeah, we see that people tend to apply the information a little bit more quickly when you break it up. You've tried the first three steps, you practice it… you try the next three, and you practice those. The shooters internalize them a little better. You're able to see it almost right away, as Don said, on the smaller groups to begin with. It's typically the first (or close to the first) sighter string of the day. You get a jump on that. You don't shoot 3 or 4 strings before

you start seeing results. They start off smaller to begin with.

CM: Have you seen any downsides to this method versus the original method for Six Steps to Firing the Shot?
RW: No, not really. The only downside, if you want to look at it as a downside, some people who have been around for a while they'll have the old, *"Well, that's not we've done it."* But again, once you apply this and become accustomed to it, there's really no downside to doing it. It takes maybe a few minutes longer that you can pick up later. You end up not having to shoot as many sighter squares because the results are more evident earlier on. It actually shortens the number of sighter squares you end up shooting.
DD: I might also add that I've never had any shooters complain about not shooting enough.

CM: Don, what would you tell somebody who wasn't interested, or maybe reluctant even, to try this method. So, is this method going to be mandatory for Appleseed?
DD: No, it will never be mandatory. We believe in Liberty at Appleseed. Those who object to it do so because it cuts down on the shooting Saturday morning. It does cut down on the shooting, but it doesn't cut down on the *learning*.
This method has worked extremely well in some southern states and has been adopted in other areas. I would hope that other Shoot Bosses would at least consider the results that we have and give this a try.
RW: As Don said, the result is we're shooting a little less in the morning. But Don said something years ago when I worked a shoot with him that's stuck with me. He tells shooters, "We assume you've come here to learn to shoot, not just to shoot because you can do that at home." We're there to improve their shooting, not just to give them an opportunity to shoot and turn money into noise. So, It's the instruction that's important. By changing this, we've found we've got some really good results with it. I think it's one of those things that you ought to try it and see how it works for you.

This was not part of the interview, but for your convenience here is the recommended sequence of events if you'd like to try this:

- *Sling Use*
- *Steps 1-3 of Firing the Shot*
- *NPOA*
- *Prone*
- *NPOA Exercise (fitting rifles, practicing finding & shifting NPOA)*
- *Review Steps 1-3 & present Steps 4-6*
- *Trigger Control Drill*
- *Dry Fire Drill*
- *First Square of the Day*

Also, you'll find descriptions of the NPOA exercise, Trigger Control Drill, and Dry Fire Drill in Chapter 18 of this Textbook.

Chapter 17: Teaching Positions

How to Teach and Model a Position

Let's talk about Appleseed Guideline #5, Simplicity and Precision. We must keep our instruction *simple*. Further, we must keep our instruction *precise*. These complement one another. As we mature as instructors, we find ourselves saying less and using more precise words. This benefits us in two ways: first, shooters will understand us better and that means they will retain more information; and second, it helps us avoid feeding the Time Monkey.

With that in mind, it's important we learn Appleseed's key words for teaching a position and use them consistently. You'll hear those in the position videos. Once you've mastered teaching one position, you'll be relieved to discover many of the steady hold factors are common to other positions. That makes mastering subsequent positions easier.

When teaching positions, use a model instead of trying to teach and model yourself. It gives a fellow volunteer experience in front of the group. It shows teamwork. It also allows you to focus on teaching rather than demonstrating. Before we come to the line to teach a position, if possible, rehearse with the model you've been assigned. This is especially important if you rarely team up with your assigned models.

Our keyword for teaching is professional: your presentation should be crisp and polished. If you're teaching a position for the first time, don't fret. Crispness and polish will come with experience.

The Instructor giving the block should be well-positioned so they do not block the shooters' view, but can gesture effectively and make good eye contact. The Instructor will position the model so during the demonstration, the model's trigger side is to the audience so all can see. For larger groups, you may ask shooters to get close and the front row take a knee.

There are some things we expect from Instructors or IITs when teaching a block of instruction:

- Plant your feet. It is very distracting for an Instructor to be stepping over or walking around a model, so plant your feet. It's okay to take a step to one side or the other to emphasize a point, but avoid "happy feet".
- Engage the shooters. You want to have regular eye contact. You'll be able to tell if they are following along (or not).
- Use Total Participant Involvement (TPI). Shooters learn more when they are involved in the learning process, so ask leading questions when it's appropriate. It's likely you'll have more opportunity for TPI on Sundays than Saturdays.
- Remove your sunglasses. You can live without them for 5-7 minutes. Connect with your shooters through eye contact.
- Use proper terminology. For example, the USGI sling has a J-hook, an H-buckle, and a keeper. Or for example, in prone, we shift from the hips not from the belt buckle. (This goes back to our method of teaching with of simplicity and precision.)
- Finally, when the block of instruction is complete – thank your model!

That about does it for Instructors. There are also some things we expect from models when teaching:

- Models are….? [chorus - SILENT!] Exactly! Unless you're the Shoot Boss and need to make a correction, be silent when modeling. It can be VERY distracting to an Instructor. You don't want to throw him off track.
- Models should remove hat and sunglasses. By removing hats and sunglasses the shooters can better see proper cheek weld and sight alignment.
- Model the ideal position. I know some of us have techniques we prefer when shooting. However, it's important to model what Appleseed teaches rather than our favorite technique. That said, if you can't safely do something you've been assigned, talk to the shoot boss in advance. She'll figure something out.
- It's important for you follow directions. When modelling, follow the step-by-step instructions given to you, even if you think it's wrong. If the shoot boss needs to make a correction, he will.
- Similarly, don't get ahead of your Instructor. You want to look like a team. Getting ahead will confuse the shooters as they are seeing one thing and hearing another. When you demo, be prepared to go at the pace of the Instructor narrating rather than the proficient pace you normally perform the task. This is especially important when it comes to the steps of getting into a sling.

That does it for models.

When it comes to actually teaching a position in Project Appleseed, we organize and present information in a specific way. The beauty is if you always teach it the same way, you'll rarely miss anything.

We teach a position in this order:

- First: Sling
- Second: Index
- Third: Steady Hold Factors
- Fourth: Shifting

Let's talk about these.

First, the Sling. When describing the sling for your position, simply note the preferred sling configuration, but that another type will still provide support. Don't reteach the sling block, as that's feeding the Time Monkey. Your Shoot Boss may ask you to teach & demo the position with both Hasty and Loop Sling – some do, some don't.

Next after the Sling is Index. When describing the index, ask your model to address the target head on and then deliberately index his body however many degrees to the trigger side. Remember, whatever degrees is a good starting point, but body geometry ultimately determines their individual index. (Be aware. In Project Appleseed, we never use a term before it's been defined. If the shooters haven't been introduced to NPOA yet, leave it out.)

After Index is SHFs. When describing Steady Hold Factors, start at the support hand and work your way around the shooter counterclockwise (for a right-handed shooter). Describe each SHF crisply and move on to the next one.

Finally, Shifting. When describing how to shift sights, explain that once we get into position our sights are likely not pointed precisely at the target. To shift our sights onto target, we must move our body and rifle as a single unit around a pivot point. The method of shifting the sights is unique to each position. If NPOA has already been discussed, it can be touched upon. This is a good time to use TPI to reinforce the steps to confirm NPOA.

Models should use exaggerated motions when demonstrating shifting sights so all shooters can observe clearly, and the Instructor should emphasize these are exaggerated movements so everyone can see.

To review, the order of the block is: Sling, Index, Steady Hold Factors, and Shifting.

Prone Position Framing

After we frame prone position, it should be presented in a particular order.

- First, explain what sling is used.
- Second, describe the index to the target.
- Third, review the steady hold factors.
- Fourth, describe shifting.

When describing the sling, briefly cover that we recommend using a loop sling for maximum stability, but a hasty sling will also work.

When describing the index, it's helpful to ask your model to face the target head on and then deliberately index his body 30 degrees to the trigger side since that is a good starting point for most shooters. Then, the model can drop down into prone.

When describing Steady Hold Factors, start at the support hand and work your way around the shooter counterclockwise (for a right-handed shooter). Describe each Steady Hold Factor crisply and move on to the next one.

When describing Shifting our sights, explain that the support side elbow is the pivot point. We move our body as a unit around that pivot point by shifting from the hips. A word of caution: if the shooters haven't been introduced to the term NPOA yet, don't use it here.

To review, the order of the block is: Sling, Index, Steady Hold Factors, and Shifting.

If you always rehearse and teach the block in this order, you'll be more confident with your material and less likely to miss a point of instruction.

For simplicity today, our model is already in the loop sling. Your shoot boss may expect you to demo with the hasty sling first and that's fine but takes a little bit longer.

Prone Position Example

Shooters, center up for instruction! I am going to teach you about the prone position, which is the most stable shooting position in Project Appleseed.

For prone position we recommend using the loop sling for maximum stability, but a hasty sling will work also.

My model is already in a loop sling, so I'm going to ask him to demonstrate the proper index to the target. Observe our model. He will address the target straight on and index about 30 degrees to the trigger side. This is a good starting point; you can adjust for your own body geometry from here.

Now I'll ask my model to get into a proper prone position using his trigger hand to support him on the way down *(and controlling the muzzle with the support hand*[1].) I'll ask him to first get into a kneeling position as though he just donned his sling.

[PAUSE: MODEL TRANSITIONS FROM STANDING TO KNEELING ON THE FLOOR]

To get into the prone position, he uses his trigger hand for support and extends his legs behind him, always being careful to keep the muzzle pointed downrange.

[PAUSE: MODEL TRANSITIONS FROM KNEELING INTO PRONE POSITION]

The steady hold factors for prone position are:

The support hand is open, loosely cradling the rifle.

The sling is snug, smooth across the back of the hand, and high in the armpit.

The support elbow is as far under the rifle as possible and forms a good 'V' for stability. Ideally, we should be able to look through the magazine well from the top and see the elbow. The support arm should be totally relaxed so that the sling supports the rifle.

The support leg is extended straight back and in line with the spine. The support foot should be relaxed and off to the side, nearly flat on the ground.

The trigger knee is drawn up as high as possible and bent at approximately 90 with the shin parallel to the rifle.

The trigger elbow is firmly planted on the mat.

The last three fingers of the trigger hand form a firm, handshake grip pulling the stock firmly into the shoulder pocket.

The trigger finger forms an exaggerated 'C' shape with the first pad of the finger on the trigger. (Heavier triggers may require the first knuckle joint to be used instead.) We should be able to see daylight between the trigger finger and the stock. If the finger touches the side of the stock, we call this "Dragging Wood" and it will cause the rifle to be pushed to the side when pulling the trigger. One way to correct this is to rotate your hand toward the trigger side of the stock and even bring your thumb to the top or side of the stock in order to get the "C" shape.

[1] This phrase was added to the text after filming.

The neck should be extended as far forward as possible into a "Turkey Neck" and the cheekbone should drop on to the stock in a solid "Cheek Weld" with the full weight of the head resting on the stock, where it shall remain throughout the string of fire. The cheekbone itself should act like a shelf resting on the top of the stock. The keywords here are STRETCH and DROP.

Once you are in a good prone position, you will need to shift your sights on to the target. You do this by using your support elbow as a pivot point and then moving your entire body and rifle as a unit, using your hips, to shift your sights. Watch as my model moves his sights to the left by keeping his support elbow planted and shifting his hips to the right.

To move his sights to the right, he shifts his hips to the left.

He moves his sights down by shifting his hips forward.

and then moves his sights up by shifting his hips backward.

One way to think about shifting your sights is to consider yourself to be one of those green, plastic Army men, like the ones you might have had as toys. If you want to aim a plastic Army man in a different direction, you have to move the entire thing at once. There's no way to move individual parts. It's the same thing with shifting your sights. Move your entire body by shifting your hips about your support elbow as a pivot point. My model is making exaggerated movements so you can see them clearly. You will probably only need to make small movements to shift on to your target. In fact, sometimes the movements are so small they are almost just a wiggle in your clothes.

What are your questions about the prone position?

[PAUSE: SHORT PAUSE TO TRANSITION TO TALKING TARGETS SEGMENT]

Okay, at this point your shoot boss may expect you to start introducing the concepts of Talking Targets. To do this, you can use Total Participant Involvement (TPI) to ask questions like these:

Take a look at our shooter while he breathes. If he doesn't always break the shot at his respiratory pause, what might his group look like?

[PAUSE: MODEL TAKES EXAGGERATED BREATHS TO DEMONSTRATE VERTICAL SIGHT MOVEMENT]

Yes, his muzzle moves up and down when he breathes, so the group on the target will have a vertical pattern if he takes shots at different points in his breathing cycle.

Let's look at another example. If our shooter does not squeeze the trigger slowly and straight back, maybe he is even Dragging Wood, what might that do to the rifle, which should be perfectly still when firing the shot? How would that affect our group on the target?

[PAUSE: MODEL DEMONSTRATES DRAGGING WOOD, PUSHING THE RIFLE TO THE SIDE]

In this case we expect to see a horizontal pattern on the target because the rifle would be moving from side to side.

Let's consider one more example. Model, please extend your support elbow out to the side and exaggerate breathing. If he doesn't break every shot at his respiratory pause, how would that affect his group on the target?

[PAUSE: MODEL TAKES EXAGGERATED BREATHS TO DEMONSTRATE DIAGONAL STRINGING]

This one might be more difficult to see from where you are standing. In this case the rifle is moving in a diagonal pattern as he breathes because his elbow is off to the side. We expect to see that same diagonal pattern on our target if the shots are fired at different points in his breathing cycle.

[PAUSE: SHORT PAUSE TO TRANSITION FROM TALKING TARGETS TO GETTING OUT OF PRONE POSITION]

Now I'll ask my model to demonstrate proper muzzle control while moving from the prone position back to the proper position to remove his sling. First, we will demonstrate the kneeling sling method. Notice how the model uses his trigger hand for support and draws his knees up toward his chest while always being careful with the direction of the muzzle. This will keep the muzzle close to the firing line.

[PAUSE: MODEL TRANSITIONS FROM PRONE TO KNEELING]

Next, we will demonstrate proper muzzle control when using the cross-legged sling method. I'll ask my model to move from the kneeling to the cross-legged position for this demonstration.

[PAUSE: MODEL TRANSITIONS FROM KNEELING TO CROSS LEGGED]

To get into the prone position, he will roll on to his support elbow, using his trigger hand for support, while extending his knees and hips behind him. Notice that the muzzle is always pointed downrange.

[PAUSE: MODEL TRANSITIONS FROM CROSS LEGGED TO PRONE]

When returning to the cross-legged position, he will use his trigger hand for support while bringing his knees toward his chest and crossing his legs under his body as he sits up, always being careful of the muzzle direction.

[PAUSE: MODEL TRANSITIONS FROM PRONE TO CROSS LEGGED]

When you return to the firing line, we recommend you rotate your mat about 30 degrees toward your trigger side as a reminder to index your body.

What questions can I answer about anything we've covered on the prone position?

Model, thank you for modeling for us.

<u>Sitting Position Framing</u>

We teach each shooting position in a specific order: SLING, INDEX, STEADY HOLD FACTORS and SHIFTING

When describing the sling configuration, be sure to point out that, although we recommend

using the loop sling for the Sitting and Kneeling positions, a hasty sling will also work. Some shooters may come with a sling that can only be used as a hasty sling.

To explain how to index to the target, ask your model to address the target straight on and index 30 to 45 degrees to the trigger side before getting into the sitting position. Explain that this is only a starting point as our body geometries are all different. Then the model can lower to one of the sitting positions.

When describing the STEADY HOLD FACTORS, always start at the support hand and work your way around the model counterclockwise~~,~~ for a right-handed shooter. Describe each SHF crisply and move on the next one.

Explain that SHIFTING the body in the Sitting Positions can be accomplished by using a combination of movements.

To review, the teaching order for all positions is: SLING, INDEX, STEADY HOLD FACTORS, SHIFTING.

If you always rehearse and teach the block in this order, you'll be more confident with the material and less likely to miss a point of instruction.

For simplicity, our model is already in the loop sling. Your shoot boss may have you demo with the hasty sling first for those whose sling cannot form a loop.

Sitting Position Example

Cross-Legged

Shooters, center up for instruction! We will demonstrate how to use the Sitting Position for shooting. Our model is already in the Loop Sling, which we recommend for the Sitting Positions.

First, the model will address the target straight on and index about 30 to 45 degrees to the Trigger Side. This is a starting point. Depending on your body geometry you may find that you need to Index a little more or a little less.

Next, while keeping the muzzle in a safe direction, and using the Trigger hand for stability, sit down. This is the Cross-Legged Position.

The Steady Hold Factors for this position are:

- Support hand, Open, loosely cradling the rifle
- Support elbow, placed on the target side of the knee if possible. Otherwise, in the pocket of the knee.
- Sling, smooth across the back of the hand, snug, and anchored high in the armpit
- Support leg, crossed over the trigger side leg
- Trigger leg, brought in close to the body and under the support leg
- Trigger elbow, placed on the target side of the knee
- Trigger hand has a firm hand-shake grip, pulling the butt of the rifle firmly into the shoulder pocket

- Trigger finger is in an exaggerated "C" shape with the first pad of the index finger centered and low on the trigger.

Neck is extended forward as far as naturally possible into what we call a "turkey neck"

Cheek is dropped on the stock with the full weight of the head resting on the rifle, forming a good "cheek weld", where it shall remain throughout the string of fire.

What are your questions about the Cross-legged position and steady hold factors?

When you initially get into position, the chances are almost Zero that your sights will be on target, so you will need to shift your sights.

To shift Left or Right, your pivot point is the base of your spine. Use your feet to shift left or right.

To shift Up or Down, you have several options:

- Bring your legs in tighter or looser
- Shift your elbows in front of your knees, closer to the target, or back into the knee pocket
- Switch your Support and Trigger legs
- Slide your support hand closer to you or farther away

How do we confirm Natural Point of Aim in Sitting? The same way we do in prone. Close your eyes. Relax your body. Take a deep breath and let it out. If you're on target, great! If you're not on target, shift until you are and repeat the process.

What are your questions about the Cross-legged Sitting Position?

Crossed Ankle

Next, our model will demonstrate the Cross-ankle sitting position by simply extending the legs out from the body and locking the feet together.

The elbows stay on the target-side of the knees, or in the knee pockets. The other SHFs for this position are the same as the Cross-legged position.

Shifting in the Cross-ankle position can be done Left or Right by simply wiggling the feet.

Shifting Up or Down can, again, be done in several ways:

- Raise your knees higher or lower by moving the feet closer or farther out
- Move the elbows farther out or back to the knee pockets
- Move the support hand closer or farther out

What are your questions about the Cross-ankle sitting position?

Open Legged

Next, our model will demonstrate the Open-legged sitting position by simply un-crossing the ankles and opening the legs, being careful to not let the legs bow out, which would introduce

more muscle into this position.

Place the upper arms on top of the kneecaps with the elbows on the target side of the knees. Ideally, feet in this position are flat on the ground.

If you cannot do that, dig your heels in. Again, the other SHFs are the same, and shifting NPOA is done in the same way as for the Cross-ankle sitting position.

What are your questions about the Open-legged sitting position?

Kneeling

Last, we have the Kneeling Position, which is less stable than the Sitting positions, but quicker to get into.

Start by facing the target straight on.

Control the muzzle with your Support hand and kneel using your Trigger hand to support yourself on the way down.

The Support foot is pointed at the target. The Support shin is vertical or with the support foot slightly towards the target.

The Trigger knee is on the ground at about 90 degrees from the Support leg. Depending on your flexibility, sit on the side of your foot and ankle or sit on top of your heel, with your heel at the base of your spine.

Place the flat of your support upper arm on top of your kneecap, with your elbow on the target side of your knee.

In this position, there is no place to support your Trigger arm, so it is raised into what we refer to as a "chicken wing." Your trigger arm should be about 45 degrees or less with a pistol gripped stock, or 45 degrees or more with a comb stock.

Shift your support foot for left and right adjustments.

Vertical adjustments can be made in several ways:

- Shift your Support foot farther towards the target
- Slide your upper arm on your knee
- Or, slide your support hand on the stock

What are your questions about the Kneeling or any of the Sitting Positions?

Standing Position Framing

Standing position can be a challenge for new shooters primarily for two reasons. One, because of the difficulty they might have in supporting a rifle that might be heavier than they can comfortably manage and two because of difficulty in acquiring a good NPOA. Of all the positions we teach, standing has the fewest points of contact with a solid surface making it the least stable position and shooters find it difficult to keep the sights on the target. Therefore,

the TWO critical points on this position are correct sling usage and how to effectively find NPOA.

I'll talk a bit about how to teach the standing position and then we will demonstrate teaching the block.

After we frame the block of instruction, it should be presented in a particular order, similar to the other positions. It's slightly different for standing position: Index, Sling, Steady Hold Factors, NPOA/Shifting. Unless you have the shooters index first it will cause a safety violation when raising the rifle into position. For this reason, indexing to the target should be the first step. Then, you can share additional keys to success for standing.

Before starting, ask your model to address the target head on and then deliberately index his or her body 90 degrees to the trigger side while holding the rifle muzzle straight up.

When describing the sling, briefly cover that we recommend using a hasty sling for maximum stability, but a loop sling will also work. Most shooters who think their rifle is too heavy do not have their sling correctly tensioned.

When describing Steady Hold Factors, start at the support hand and work your way around the shooter counterclockwise (for a right-handed shooter). Describe each SHF crisply and move on to the next one.

When describing Shifting our sights, explain that the support side foot is the pivot point and it NEVER MOVES. We change our windage and elevation by moving the trigger side foot first in large movements and then in smaller ones to get the sights onto to the target when finding NPOA.

To review, the order of the block for standing is: Index, Sling, Steady Hold Factors, NPOA/Shifting.

Finally, you'll end the instruction with keys to success for standing. There are three: breathing, resting, and magazine in trigger side pocket.

For simplicity today, our model is going to use the hasty sling. Your shoot boss may expect you to demo with the loop sling first and that's fine.

If you always rehearse and teach the block in this order, you'll be more confident with your material and less likely to miss a point of instruction. With my model Corgi Mom, I'll now demonstrate teaching the block.

<u>Standing Position Example</u>

Shooters, center up for instruction! I am going to teach you about the standing position, which is the least stable shooting position in Project Appleseed.

Unlike the other positions we teach, the first step in this position is indexing to the target. Our model addresses the target straight on and then indexes 90 degrees to her trigger side. The target is off her support shoulder.

The model is standing with her feet shoulder width apart with her weight evenly distributed.

You'll note my model has a demo rifle stock with a standard cotton GI sling. To use the hasty sling, she first insures she has enough slack by holding the rifle up and checking to see that she has at least one hand span between her thumb and pinky finger from the trigger guard.

To don the hasty sling, she holds the rifle vertically, at the grip, and raises it with her trigger hand so she can look though the trigger guard. Next, she inserts her support arm through the sling all the way up to her armpit. She will then raise the rifle, which is still vertical, until the J hook is firmly in the armpit, under tension. While maintaining upward tension in the sling, she then reaches around the sling with her support hand and places it between the sling and the forestock from the support side and grasp the fore stock. Next, she releases her trigger hand from the grip, grasps the butt of the stock, and rotates the rifle, bringing the stock up to her face and the butt of the stock to a point high on her shoulder. As she rotates the rifle, the sling slides smoothly in her armpit and lays flat across her chest. After placing the rifle on her shoulder, she releases the butt stock and re-grasps the rifle at the grip again. The sling should remain high in the armpit, be snug, and form part of a good triangle with the upper arm and forearm. The support elbow should be under the rifle, forming a sharp V, and the support hand should be flat and relaxed under the rifle. Her sights are now in the approximate direction of the target. Let's look at the steady hold factors for standing:

The support hand is open, loosely cradling the rifle.

The elbow should ideally be directly under the rifle.

The sling is snug, not tight, lying flat across the back of the hand, high up in the armpit and lying flat across the chest. The sling forms a triangle of support and is in fact supporting the weight of the rifle. To test to see if the sling is correctly tensioned the model should be able to release the trigger hand and the sling will support the rifle in place without much, if any muscle support from the shooter. If your rifle is still "too heavy" it is probably because the sling is incorrectly tensioned.

The feet are shoulder width apart with the weight evenly distributed and the knees are not locked.

The rifle is sitting high on the shoulder and she has brought the rifle up to her eye and is not trying to get her eye down to the rifle. Her eyes are level.

Her trigger elbow is held high in a chicken wing to form a pocket where the butt of the rifle will be placed.

Her trigger hand is holding the rifle with a firm handshake grip pulling the rifle back into her shoulder pocket.

Her trigger finger is in an exaggerated C-shape and is not touching the stock of the rifle and not "dragging wood". Only the pad of the fingertip is touching the trigger.

She has a "turkey neck" and has a firm cheek weld for consistency allowing her to align her eye with the sights on the rifle.

To find NPOA in standing, she closes her eyes and gently swings the rifle in slowly decreasing

arcs *(swiveling at the hips)*[2], back and forth, side-to-side, coming to a gradual stop. When she opens her eyes at her respiratory pause, her sights are on her NPOA. If the sights are not on the target, she will move her trigger foot to bring the sights into alignment on the target. To shift her sights to the left, she will move her trigger foot forward. To shift to the right, she will move her trigger foot back. To shift her sights up, she will move her trigger foot away from the target. To shift down, she will move her trigger foot towards the target. This procedure should be repeated until the sights are on the target when the shooter completes the NPOA drill. Once you have acquired NPOA you NEVER MOVE YOUR FEET.

A few other things that are important about standing:

1. In standing, when the shooter breathes, the sights should move straight up and down. When our model inhales, the sights will move up. When she exhales, the sights move down. This movement is opposite of breathing in prone. The shot should be fired at the respiratory pause as the sights drop back onto the target.
2. If our model needs to rest, she removes her finger from the trigger and, without breaking her cheek weld, leans forward at the waist for a couple of seconds. Then she straightens back up and resumes firing. Her feet never move.
3. When she comes to the line to shoot in the standing position, her magazine will be in her trigger side pocket to keep her from having to reach back down to the mat to retrieve it.

What are your questions about standing position? Shoot Boss, is there anything you'd like to add?

Corgimom, thank you for modeling for us.

[2] This phrase was added to the script after filming.

Chapter 18: Dry Fire

Dry Fire Interview Transcript

Unlike most chapters in this text, this chapter is the transcript of the Appleseed Academy interview about Dry Fire. It's a little different, but important enough we wanted to include it here. Text is colored so you can easily track the discussion.

Corgimom: Hi. I'm Corgimom, an instructor with Project Appleseed. With me today are instructors Maximum Ordinate and Google. In our interview today, we will talk about improving shooter performance through effective dry fire and dry fire drills. I want to thank both of you for joining us today.
Google: It's good to be here. Dry fire is an important enough topic that I'm glad we can make time to talk about it.
MaxOrd: Thanks, I agree.

CM: I'd like to start by discussing the basics of dry fire. What is dry fire and why is it important?
MaxOrd: Well, Corgimom. Dry fire is absolutely the most boring thing we have shooters do. No, just kidding. Dry fire can be fun and interesting if you're motivated to shoot better. It's one of the most effective methods a shooter can use to rapidly improve their marksmanship skills. Dry fire is going through the steps of building a position, finding NPOA, making the shot with an empty rifle, and learning from the results.
Google: Dry fire is a great way to refine each of the positions and create the muscle memory to get into those positions. Settling into NPOA becomes quicker and easier with practice. Squeezing the trigger slowly and straight back and calling your shots becomes natural through dry fire.
MaxOrd: It's been said that Project Appleseed strives to remake America in to a Nation of Rifleman. That's a huge task. The more efficient we can be, the more impact we'll have. Dry fire is one of those investments in time that will help us be more efficient in the long run.

CM: So dry fire is about the trigger?
Google: That's what most of us think about in dry fire: trigger control and sight picture. However, the motions of magazine changes and position transitions can be perfected in dry practice to reduce time during those critical AQT stages.
MaxOrd: Dry firing these tasks builds good muscle memory. In other words, it's one of the best investments a shooter can make in himself as Riflemen. As teachers, we should encourage dry fire at every opportunity.

CM: What's the best way to present the concept of dry fire to shooters?
MaxOrd: First, we should frame the idea. Then, get the shooters dry firing as early as possible. My preference is shooters should be dry firing before the first square of the day. Of course, that means teaching them position, NPOA and Six Steps before a live shot is fired.
Google: Most of our shooters come to an event to hear their rifles go bang, so as Maximum Ordinate joked… dry fire may sound boring to them. It's important we frame dry fire properly

so they understand it's fun and a powerful method to improve.

CM: You both mentioned Framing the block. What does that look like?
MaxOrd: The concept of dry fire should be presented in the right time and in the right context. Don't assume shooters know anything about the topic. I recommend introducing dry fire right after the shooters have learned all Six Steps. Dry fire is closely linked to Step 6 of Firing the Shot – Follow-through. Calling the shot is where the learning happens.
Google: Dry Firing is the perfect way to develop skill with Step 6 because there is no noise or recoil. Shooters should be encouraged to Call the Shot even during dry fire. The most important thing a shooter can do while dry firing is to see if the sights remain on the target as the trigger breaks. If this isn't the case, you must determine what caused the sight to move and correct this defect.
MaxOrd: Some instructors are in a rush to get people shooting, but I'm in a rush to get them learning. In my mind, that means we dry practice and dry fire everything before a live shot is fired.

CM: A friend told me we should never dry fire rimfire rifles. What do you think?
Google: Any risk in dry firing rimfire rifles comes from the design of a particular rifle. The firing pin on a rimfire rifle pinches the rim of the cartridge between it and the chamber of the barrel. Many early rimfire rifles were not designed to be dry fired without a case in the chamber. If you did, the tip of the firing pin would impact the breech. Repeated dry firing damaged the rifle because the firing pin tip deformed or breech face got peened. Modern centerfire rifles and most modern rimfire rifles are safe to dry fire. Some rifles like the Ruger 10/22 and the Tippmann Arms are specifically designed to avoid this issue.
MaxOrd: That's right. There are a few manufacturers that don't recommend dry firing their rifles with an empty chamber. Anschutz, older Browning models, the CZ 452, and early Winchester 52s should not be dry fired without a snap cap or drywall anchor placed in the chamber to avoid the impact. Also, Remington warned against "extensive" dry fire of their model 597. If you see any of these rifles on the line, loan the owner a snap cap.
Google: Each Shoot Boss can order a bag of a dozen .22 caliber snap caps through the Shoot Box store to keep on hand. These were designed by an Appleseed volunteer. They are made of a special plastic to absorb many, many impacts without deforming. They'll last you a long time!

CM: So, when do we have shooters dry fire?
MaxOrd: Once shooters have been taught to dry fire properly, they should dry fire during every preparation period without exception. The Shoot Boss should establish up front and early he expects the shooters to do that on every string.
Google: The take-away here is that the instructors (especially line bosses) recognize that excessively short prep periods are counterproductive. Shooters need time to dry fire to become proficient. Shooting faster doesn't equate to shooting better.

CM: Google, are you saying that if we want shooters to learn better, we need to set the conditions to success?
Google: Yes. That means giving them reasonable opportunity to dry fire. If it's going to be a

five-round string, maybe give them time to dry fire 5 or 10 times. Of course, that doesn't mean feed the Time Monkey by catering to the slowest shooter on the line. That guy is always going to be behind, no matter how much time you give him.
MaxOrd: If you get a group of shooters who don't want to dry fire, it's usually because they don't understand the value. Huddle them up and correct the issue. If they won't dry fire on the line with instructors, they sure won't do it at home.

CM: Would this be a good time to see what teaching Dry Fire looks like?
Google: Good idea. Let's take a look.

<HOLD IN PLACE – FADE TO BLACK>

Dry Fire Example

"Shooters, Center up! Now that you've learned how your trigger breaks, let's talk about Dry Fire. Dry Fire is a technique where you practice shooting without ammunition. It allows you to focus on your position, NPOA, and steps of firing the shot without the distraction of noise and recoil.

Dry fire is such an important learning technique, Olympic-level shooters typically dry fire a hundred times for every live round they shoot. They dry fire at home and also on the range before live fire!

Dry Firing is the single most potent tool you can use to get better QUICKLY as a shooter. The best thing is it's fun and costs nothing but your time.

Dry Fire is more than just clicking your trigger. We must treat each click as if it was a real shot. Build a good solid position, find our Natural Point of Aim, shift our NPOA onto target, and then use the Six Steps to Firing the Shot. We must focus and watch our sights to learn what is working for us and what isn't. The goal is to have the sights remain perfectly still and on target when the trigger breaks. If the sights move off the target, think about what might have caused that or ask an instructor.

When the Line Boss puts you in prep, we want you to build a good prone position. Practice finding your NPOA and shifting it to the center square. When a coach comes to your side, he will rack the bolt for you. Fire the shot using the Six Steps and watch your sights. Once your coach has racked the bolt two or three times for you, you can rack on your own. When you rack the bolt, your body is moving. Therefore, it's critical you start by finding your NPOA again.

Pay attention to every shot and you will learn from it.

One last thing: From here on out, every time you are placed in prep… your mission is to find your NPOA and dry fire to confirm it BEFORE we begin the string of fire.

What are your questions about Dry Firing? Shoot Boss, is there anything you'd like to add?"

<CUT BACK TO STUDIO>

MaxOrd: I think that was well done. It covered the topic without being too long.

Google: I agree.

CM: Do you have some favorite dry fire drills?
MaxOrd: I do. There are three that immediately come to mind and they complement one another. They are a Prone Drill, a Trigger Control Drill, and a Dryfire Drill. Would you like to talk about the Prone Drill?
Google: Sure. The Prone drill is a dry practice drill with no ammo or magazines on the line. It normally happens after teaching Sling, Prone, NPOA, and at least the first three of the Six Steps. At this point Saturday morning, shooters have only shot the Hits Count (Redcoat) target.
We brief shooters that when the Line Boss puts them in prep, they will be expected to build a good prone position, and start finding NPOA (which happens at Step 3). During this drill, coaches fan out along the line. They correct positional errors, assist with finding, shifting, and confirming NPOA, and fixing cheek weld issues. If you see tech sights or a scope on a 10/22, you can almost be sure the shooter will need some kind of padding to get the cheekbone on the rifle and eye properly behind the rear sight.
MaxOrd: I'm glad you mentioned cheek weld. Most of us know proper cheek weld equals sight alignment. If we ensure good cheek weld up front and early, we avoid tired and hurting necks by 2pm. An instructor can make impromptu padding with foam insulation, pool noodles, or even a stack of paper towels. Holding that in place with some vet wrap is a cheap and easy way to help get the eye properly aligned with the rear sight or scope. It might take a couple of tries to get it right. Hey, let's look at a couple of padded stocks.

<HOLD IN PLACE. FADE TO BLACK>

<CUT TO INSTRUCTORS w/TWO STOCKS BUILT UP>

<CUT BACK TO STUDIO>

MaxOrd: CorgiMom, did you notice anything?
CM: One of those stocks had way too much padding on it!
MaxOrd: That's right. One had padding in the wrong place; it would push the shooters face off to the support side. The other stock is correct for a right-handed shooter. The padding is added to bring the cheek up and not to the side.
Google: That's a great point, thank you. The benefit of this Prone Drill is it focuses only on sling, prone position, and NPOA. Trigger work is saved for later. It's less of a firehose for shooters. They learn in smaller steps, and then practice before adding more to do. Bottom line, it makes it easier for them to learn.

CM: The next drill is the Trigger Control Drill, if I recall correctly.
MaxOrd: Yes. As the name implies, it teaches good trigger technique. It's also a no-magazine / no-ammo drill. The shooters should first be presented Steps 4-6 of the Six Steps, if they didn't already receive it. The Line Boss places the shooters in prep. Shooters sit cross-legged at the forward edge of their mats, support side shoulder towards the firing line. The shooter will lay his rifle across his lap with the muzzle pointed at his target backer and trigger guard pointed

away from him. He'll remove the chamber flag and take the safety off.
Google: When joined by a coach, the shooter will grasp the rifle with the trigger hand. The shooter will then dry fire (with a snap cap if necessary) and hold the trigger back. The coach will acuate the bolt (simulating the round being fired.) Then, the shooter should let the trigger up until he hears it reset. Then, the shooter will dry fire again. Coach and shooter repeat this a few times and then the coach will ask the shooter to time his dry fire with his respiratory pause. We're introducing the concept of Rifleman's Cadence without actually calling it that. After the shooter has grasped this, the coach directs him to rack the bolt on his own, being mindful of where the muzzle is pointed.
MaxOrd: That's a good description. This allows someone to really focus on just that trigger finger. Coaches should be watchful of follow-through, respiratory pause, and proper trigger finger position. Can we show someone performing this drill?
Corgimom: Sure!

<HOLD IN PLACE – FADE TO BLACK>

<CUT TO STAGE>

Trigger Control Drill Example

<Stage: Coach and shooter are mic'd up. Scene opens with Shooter on the mat in the cross-legged position. Ruger 10/22 is on the shooters lap with the trigger guard facing the shooter. Coach approaches.>

Coach: Hi Bob, I'm here to help with your trigger drill. Let's start by turning your rifle over so the trigger is away from your body. Then, remove the chamber flag, take the safety off, and let the bolt go forward.
Coach: For this exercise, let's be sure to keep the muzzle pointed at your target downrange. Great, grab the rifle with your trigger hand and place your finger on the trigger.
Coach: I want you squeeze the trigger slow and straight back. Let the break surprise you and hold the trigger back.
<CLICK>
Coach: Good job holding the trigger back. How did that feel?
Bob: It felt good.
Coach: I'll rack the bolt to simulate the shot being fired. Then, you can let out the trigger until you hear the click and no further. Keep your finger on the trigger. We'll repeat the process.
<RACK-CLICK 1 MORE TIME>
Coach: Okay, please make sure there is space between your trigger finger and the side of the stock. That's better.
<RACK-CLICK 1 MORE TIME>
Coach: Bob, let's add something. I'm going to keep racking the bolt when needed. When you get to the end of your exhale, extend your pause and break the shot then. After the trigger breaks, you can inhale again. During your inhale, let out the trigger just until the click. Understand?

Bob: Yes.
<SHOOTER EXAGGERATES BREATHING FOR CAMERA. RACK-CLICK 2 MORE TIMES>
Coach: Good job! I want you to start racking the bolt on your own and you can practice working the trigger on your own – at your exhale. Keep that muzzle in a safe direction.
Bob: Thanks for your help.
Coach: You're welcome. Raise your hand if you need any help, but I'm confident you've got this! I'm going to help the next shooter.

<Coach moves out of frame while shooter continues to practice trigger control.>

<HOLD IN PLACE – FADE TO BLACK>

<CUT TO STUDIO>

CM: That looked like a very effective drill. Do you run the traditional dry fire drill after the Trigger Control Drill?
Google: The Trigger Control Drill is quite effective. The next Dry Fire Drill can be done back-to-back with the Trigger Control Drill. Shooters don't even need to leave the mat after trigger control. From the cross-legged position, they can don their sling and roll into prone. This is where the shooters put it all together in dry fire: good position, 6 steps, and NPOA. We encourage them to be mentally focused during this process.
MaxOrd: As a shooter becomes proficient, he'll be able to see if his sights remain still during the trigger squeeze. If the sights wander, pause the squeeze, correct what's wrong, then continue. We should coach shooters to have the discipline not to take a bad shot.
Google: let's see what that looks like.

<HOLD IN PLACE – FADE TO BLACK>

<CUT TO STAGE>

<u>Dry Fire Drill Example</u>

<Stage: Coach and shooter are mic'd up. Scene opens with Shooter on the mat in the prone position, slung up with scoped Ruger 10/22. Coach approaches.>

Coach: Hi Bob, are you having fun today?
Bob: Yeah, I'm learning a lot!
Coach: That's great! I'm here to coach you for Dry Fire. Your position looks good. Let's remove the chamber flag and take the safety off.
Coach: I want you to find your NPOA and bring it on target. Do you remember how to do that?
Bob: No not really.
Coach: That's okay. Relax your entire body and let the sling hold the rifle in place. Then, close your eyes, take a deep breath, let it out to a normal exhale, and then open your eyes.
<SHOOTER COMPLIES>
Coach: Where are your sights?

Bob: Down and left of the target.
Coach: Okay. Shift from your hips and get on target.
<SHOOTER COMPLIES>
Bob: Okay.
<RACK-CLICK 2 MORE TIMES>
Coach: I want you to break the shot at your respiratory pause. Hold the trigger back and call your shot. I'll rack the bolt.
<CLICK. COACH RACKS THE BOLT>
Coach: Did your sights move when you broke the shot?
Bob: Yes, to the right.
Coach: Okay. I want you to focus on squeezing the trigger slow and straight back. When you're ready, take another shot at the bottom of your exhale.
<CLICK. COACH RACKS THE BOLT>
Coach: Bob, that looked pretty good, how did it feel?
Bob: Good.
Coach: Good job! I want you to Dry Fire while racking the bolt on your own. Avoid moving around a lot when you rack the bolt.
Bob: Thanks for your help.
Coach: You're welcome. Raise your hand if you need any help, but I think you've got this! I'm going to help the next shooter.
<Coach moves out of frame while shooter continues to practice Dry Fire.>

<FADE TO BLACK>

<CUT BACK TO STUDIO>

Google: What you'll notice is the coach helped with racking the bolt two times, then encouraged the shooter to do it for himself without disturbing his position. The coach was looking at everything by this point: solid position, Six Steps, and NPOA. After working with the shooter for a little bit, the had the shooter dry fire on his own and moved on to the next shooter.

CM: MO, when you're shoot boss… what do you do when you get a group of shooters who start prep, sling up, and just lay there waiting on the Line Boss?
MaxOrd: If you get a group of shooters who aren't interested in dry firing, it's usually because they don't appreciate the value. Huddle them up and correct the issue. If it's late in the day, it might just be fatigue. Take a break, have everyone hydrate with a toast to Liberty, and maybe tell a short story while they rest and refocus.
Google: We need to dispel the myth that dry fire is boring.

CM: We want our shooters to take the skills we give them and practice at home. What advice should we be giving shooters about dry fire at home?
Google: Dry firing at home is a great way to make the Six Steps of Firing the Shot second nature. When we encourage shooters to dry fire at home, we emphasize safety. When dry

firing at home, check and recheck that the rifle is empty. Remove all ammunition from the room where we practice. Know what is behind the wall our target is on. If anyone comes into the practice room, stop and ask them to leave.
MaxOrd: Exactly. There is zero tolerance for error. If we're interrupted during dry fire, before resuming: re-check that the rifle is empty! It will be a hard sell to a jury that you really didn't intend to shoot your child or a neighbor! It's imperative we teach people dry fire safely.

Corgimom: Maximum Ordinate and Google, thank you for talking to us today. I hope all our viewers will learn how to help our shooters excel through effective dry fire!
MO: You're very welcome.
Google: Thank you for having us.

Chapter 19: Talking Targets

Talking Targets Framing

Talking Targets is a proven method we use in Project Appleseed with a goal of making shooters more self-sufficient in diagnosing their own shooting errors.

During this block of instruction, we introduce a series of the most likely shot patterns they will see on their targets. If possible, this block should be taught at the target line using real targets for examples. If you don't see all the examples we discuss in this block, you can of course draw patterns on a Drill Target.

Although there are probably hundreds of combinations of things that could cause the shot to end up other than were it is being aimed, we have identified a few particular very common patterns that will cover the vast majority of what we will see on the line at a 25 meter event.

The 5 most common patterns we see, and the causes are:

1. Vertical stringing: failure to fire at the respiratory pause.
2. Horizontal stringing: usually caused by improper trigger control disrupting the sight picture as the shot is fired.
3. Diagonal stringing: a combination of two errors. First, the support elbow not under the rifle causing the sights to move diagonally across the target as the shooter breathes. Second, failure to fire at the respiratory pause. A right-handed shooter's diagonal string will be top left sloping down to the bottom right. Left-handed shooters will be just the opposite.
4. Shotgun small: a failure to focus on the front sight if shooting iron sights or the reticle. Also, could be a failure to acquire and maintain NPOA.
5. Shotgun large: a failure of one or more of the three major fundamentals: NPOA, proper position, or the 6 Steps of Firing the Shot.

Talking Targets Example

Shooters center up! This block of instructions is on talking targets.

Your target will give you all the information you need to diagnose your mistakes. In Project Appleseed we have identified certain patterns on targets that indicate some of the mistakes that you're making when you're shooting.

We have broken these patterns down in five separate targets and will teach you those today and show you how the mistakes you're making contribute to the patterns you're seeing on the target. That way you can correct your own shooting errors when you're by yourself at the range.

Figure 2 - Talking Targets

Vertical stringing: Let's look at this pattern. We call this one vertical stringing. On your target you'll have a series of holes mostly in a line straight up and down. This is usually caused by failure to fire at the respiratory pause, Step 3 of Firing the Shot. The string straight up and down indicates that you are firing at different points in your respiratory cycle and not on a respiratory pause at the bottom of your breathing cycle.

If you see this on your target, pay close attention to whether you are really firing on a complete exhale on the next target. If you are, there will only be one hole.

Horizontal stringing: The next pattern I want to talk about is horizontal stringing. If you look at your target and you see a row of holes spaced horizontally across the target face this is called horizontal stringing. Generally, this is caused by improper trigger control or “dragging wood”. These will cause the muzzle of the rifle to move from side to side as the shot breaks causing this horizontal pattern.

Shooters, hold your trigger hand up. I want you to jerk your trigger finger straight back. When you do that, what else is moving? That’s right – the other fingers. When shooting, what are those other fingers attached to? Correct – the rifle stock.

If you're not SQUEEEEEZING the trigger straight to the rear this will deflect the muzzle of your rifle as you fire the shot. It only takes moving the muzzle the width of a piece of paper to throw your shot off an inch at 100 yards.

Diagonal Stringing: If you look at your target and you see a string that goes from the top right

to low left or top left to low right this is called a diagonal string. The direction of the slope of that string depends on whether you're right-handed or left-handed. The vertical component of diagonal stringing is caused by failure to fire at the respiratory pause. The horizontal component of this pattern is caused by not having the elbow directly under the rifle.

So, if you see this pattern on your target, go back and make sure that you get your support elbow underneath your rifle and ensure that the sights are moving vertically as you breathe, then fire at respiratory pause. That should fix the problem.

Shotgun small: This pattern of holes is what we call shotgun small. It's called shotgun small because it looks like you shot it with buckshot out of a shotgun. It might have a definable center, but it is still too large to make an adjustment to move that group into the target area you've been aiming at. The cause of this shooting error is failure to focus on the front sight or reticle (if you're shooting an optic). It could also be failure to acquire and maintain your Natural Point of Aim.

Shooters, hold your thumb out in front of your face! Now, I want you to focus on a distant object with your thumb in your field of view. Keep your focus on that distant object. What does your thumbnail look like? That's right – it's blurry. Because our eyes can only focus on one plane, we have to stay sharp on the front sight or reticle. It's easy to keep that sharp front sight centered on a blurry distant target. It's hard the other way around.

So, when you go back to fire the next string, if you're shooting irons make sure that your focus is on the front sight of the rifle so the front sight is crisp and sharp and the target is a little fuzzy. If you're shooting an optic, make sure your focus is on the crosshair and the crosshair not moving as you fire the shot. Also, verify your NPOA before firing the shot.

Shotgun Large: This next pattern is called shotgun large. You'll note that it looks like shotgun small only a lot LARGER. This pattern typically does not have a definable center. The cause of this pattern is a failure of one or more of the fundamentals of marksmanship, which are: Steady Hold Factors, the 6 Steps of Firing a Shot, or Natural Point of Aim.

The answer is to go back to the basics. The way the instructors diagnose this is to watch you and start from the beginning with the steady hold factors and go one by one to eliminate any errors in your position. Then they move on to the six steps of firing a shot and try to fix your errors one at a time as we see them.

Alternatively, if you've been shooting really well all day and then things suddenly go crazy, check your equipment. Something may have suddenly come loose.

ONE LAST PATTERN: What's wrong with the pattern on this last target? That's right – nothing! This is the type of group you're looking for.

What are your questions about talking targets? Shoot Boss, do you have anything you'd like to add?

Chapter 20: Inches-Minutes-Clicks

Inches-Minutes-Clicks Framing

This method of teaching IMC is a way that simplifies learning for the shooters.

Before we get into the structure of the block, I'd like to share a few tips:

- First, draw your diagrams neatly and large enough that everyone can see the details. Rather than having some large pre-printed display, it's recommended you draw your diagram as you go. This will ensure shooters aren't jumping ahead of you and missing the points you share.
- Second, use units of inches throughout the presentation rather than switching to units of feet. This will be less confusing to shooters as they learn new information.
- Third, ensure you use a value, label, and direction when teaching. For example, 3 inches up / 7 minutes left / 5 clicks down are all examples of using a value, label, and direction when going through the block. This will help you be methodical and deliberate in your presentation.
- Fourth, it is recommended that sight adjustments be expressed in clicks per MOA rather than MOA per click. It is a subtle difference, but shooters seem to make the conversion more easily in this direction.
- Finally, organize your data. Using a tic-tac-toe style chart works well for this.

There is a clear structure to the block of instruction for IMC. The structure I'll share is effective because it compartmentalizes information and teaches from the known to the unknown. The structure here takes a concept (framing), a process (IMC), and then an action (what the shooter needs to do with the information) and lays it out very deliberately.

The structure is:

- Framing
- Inches
- Minutes
- Clicks
- Shooter Actions

The biggest question in the structure is where to introduce the concept of a Minute of Angle. While I've seen it done different ways, I strongly encourage defining the minute of angle during the *framing*. The benefit to this is when we get to the IMC process, we don't need to interrupt the flow of the steps we are presenting to the shooters. It's smoother and any questions about defining an MOA are confined to the framing.

Let's talk about each of these in order:

Framing. When we frame IMC effectively, it does a few things for us: First, we define why we're doing it - providing a method to adjust sights on any rifle with an adjustable sighting system that works at any distance. Second, we lay out the problem in a diagram that shooters can understand. The point of impact doesn't correspond with the point of aim; therefore, we need to compensate (adjust) for that angle. Third, we have a short discussion about angles and

define an MOA. Finally, we explain a shooter needs a good enough group to begin the process (1.5"-2" at 25m with a definable center.)

Inches. We measure inches the POI must be moved, horizontally and vertically.

Minutes. Using the inches, we determine the Minutes of Angle required (in this case, at 25m).

Clicks. This is about knowing your rifle's sights and *clicks per MOA*. A few relevant examples are helpful, based on what rifles are on the line. This is a place where over-teaching becomes a hazard.

Shooter Actions. Go back to your targets, do the IMC process, and when the LB puts us in prep you can begin making sight adjustments.

Lastly, we close out by asking what questions folks have. Watch for those shooters with "deer in the headlights" faces and encourage them to speak up.

<u>Inches-Minutes-Clicks Example</u>

Shooters, center up for instruction!

A rifleman never wastes a shot. Even a miss can provide valuable information about his technique, his equipment, and the conditions. Whenever a rifleman approaches his target, he asks himself two questions — how big is my group and where is my group?

Our focus so far today has been on the first of those questions, getting good shot groups. Now that most of you have well-defined groups, we can talk about the second question, where is your group compared to your target?

I am going to teach you about something we call Inches, Minutes, and Clicks, or IMC.
[PAUSE: WRITE IMC ON THE WHITEBOARD]

This is an efficient way to move your shot groups on to your target. It is often called zeroing your rifle. This method works for any rifle with an adjustable sight system and it can be used at any distance.

Let's take a moment to look at what's really going on when we are aiming at the center of our target and the shot groups are not on that target.
[PAUSE: DRAW PICTURE OF SHOOTER, TARGET, SHOT GROUP, ANGLE]

If we draw a line from our sights to the center of our target and then draw another line from the end of our barrel to the center of our shot group, we see that there is an angle between the two lines. Our job when zeroing our rifle is to adjust our sights so that the angle between the lines approaches zero. When we close that angle down, our shot groups, or Point of Impact (POI), will be at the same place as our Point of Aim (POA).

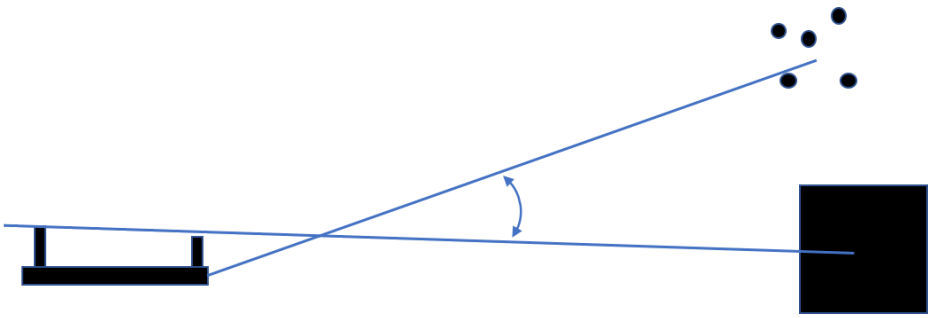

Figure 3 - IMC - Framing the Problem

Since we need to talk about angles and it may have been a while since you thought about angles, let's do a short review. We will start with a circle.
[PAUSE: DRAW PICTURE OF A CIRCLE]

How many degrees are there in a circle? That's right, 360.
I can divide this into smaller portions, for example,
[PAUSE: DIVIDE CIRCLE INTO QUARTERS]

How many degrees are there in a quarter circle? Exactly, 90.
[PAUSE: DIVIDE QUARTER IN HALF]

In half of that? Yes, 45.
I can continue to divide this smaller and smaller until we get to one degree, which seems very small.
I'm going to draw an angle that is 1 and extend it out to 100 yards.
[PAUSE: DRAW 1 AND EXTEND TO 100 YARDS]

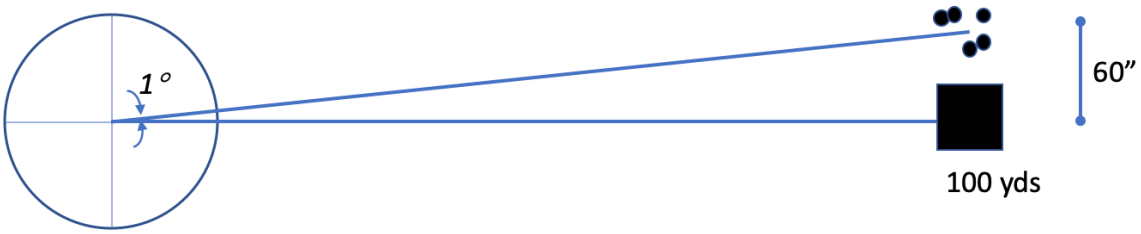

Figure 4 - IMC - One Degree at 100 Yards

One line of the angle ends at a target and the other ends at a shot group. If I miss my target by 1 at 100 yards, can anyone tell me by how many inches I will miss my target? Well, 12 inches is a good guess, but the actual number is 60 inches.
[PAUSE: WRITE IN 60 INCHES AT 100 YARDS]

Sixty inches. That's a big number. If we tried to adjust rifle sights in 1 degree increments to put our shot group on the target, then each time we adjusted our sights it would move our shot group by 60 inches at 100 yards. Imagine the size of target we would need in that case, maybe

the size of a barn. That's obviously too large of an angle to use to adjust sights.

To get a more reasonable adjustment increment, we divide that 1 into 60 equal parts and each of those parts is called a minute, just like hours are divided into 60 minutes.
[PAUSE: WRITE 1/60 = 1 MOA ON THE BOARD]

When we divide that 1 angle into 60 equal parts, our distance at 100 yards is also divided into 60 equal parts, each of which is 1 inch.
[PAUSE: SHOW 1 INCH INCREMENT AT 100 YARDS]

In other words, if I have a target at 100 yards and miss it by 1 MOA, I will miss by 1 inch. To look at it in terms of sight adjustments, changing our sights by 1 MOA would move our shot group by 1 inch at 100 yards. That is something we can work with.

Let's consider 1 MOA a bit further since it's so important in adjusting our sights. I'm going to draw a diagram that is 1 MOA but this time I'm going to extend it to even longer distances.
[PAUSE: DRAW INITIAL 1 MOA DIAGRAM]

Notice that the size of the angle, 1 MOA, doesn't change as we go out to longer distances, but the distance between the lines changes. 1 MOA is always 1 MOA regardless of the distance.

I'll mark a point on the lower line and say it is at 100 yards. We just said that the distance between two lines at an angle of 1 MOA at 100 yards is 1 inch.
[PAUSE: DRAW IN 1 INCH AT 100 YARDS, ALSO MARK 200 YARDS]

If I go out to 200 yards, what do you think the distance is between the lines?

That's right, 2 inches.
[PAUSE: WRITE IN 2 INCHES ABOVE 200 YARDS]

What about if I go to 300 yards?
[PAUSE: MARK AT 300 YARDS]

Exactly, 3 inches. This is pretty easy, right?
[PAUSE: WRITE IN 3 INCHES ABOVE 300 YARDS]

But we aren't shooting at 100s of yards today. Let's consider shorter distances. What is the distance between the lines at 50 yards?
[PAUSE: MARK AT 50 YARDS]

Yes, ½ inch. You've got this
[PAUSE: WRITE IN ½ INCH ABOVE 50 YARDS]

Today we are shooting at targets that are approximately 25 yards. What is the distance

between the lines at 25 yards?
[PAUSE: MARK AT 25 YARDS]

Yes, ¼".
[PAUSE: WRITE IN ¼" ABOVE 25 YARDS]

Exactly. So, at 25 yards, 1 MOA is represented by ¼ inch.

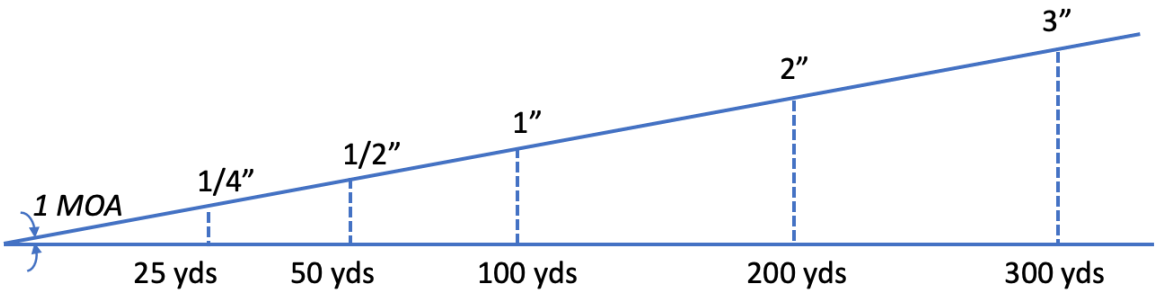

Figure 5 - IMC - Illustrating one Minute of Angle

Take a look at the squares targets we have been shooting at today. Do you see anything on the target that might be ¼ inch? Right, the grid lines on the target are ¼ inch apart, so we can use those to help count MOA.

A quick way to remember what I've shown you is that 1 MOA is represented by 1" per 100 yards.

Now that I've given you some background, let's talk about IMC.

Before starting, two conditions must be met:
1. Is the group size 6-8 MOA or smaller? (No bigger than twice the size of a square.)
2. Does the group have a discernable center?

If the answer to both questions is yes, we can proceed. If the answer is no, spend a little more time with fundamentals to improve your groups and I'm confident you will be ready for IMC soon.

We are ready to start IMC. This is a simple 3 Step process. I'll begin by drawing an example of one of the squares we have been shooting today and a shot group.
[PAUSE: ERASE THE MOA DIAGRAM AND DRAW SQUARE WITH SHOT GROUP]

Step 1 is Inches
Locate your shot group and find the center. I'll make an 'x' in the center of this group.
[PAUSE: DRAW CENTER OF GROUP]

It's ok to discard a called flyer, a shot that you knew you pulled.
[PAUSE: CROSS OUT FLYER]

Measure the distance in inches, both vertically (called Elevation) and horizontally (called Windage), that the group needs to be moved to be at the center of the target.

Record this distance in a table to help organize the numbers. Be sure to record the direction to move the group! In this example the group needs to be moved 1" Down
[PAUSE: DRAW 1 INCH ELEVATION. DRAW TABLE AND WRITE 1 DOWN IN THE ELEVATION BLOCK FOR INCHES]

and ¾" Right.
[PAUSE: DRAW 3/4 INCH WINDAGE AND WRITE 3/4 RIGHT IN THE WINDAGE BLOCK FOR INCHES]

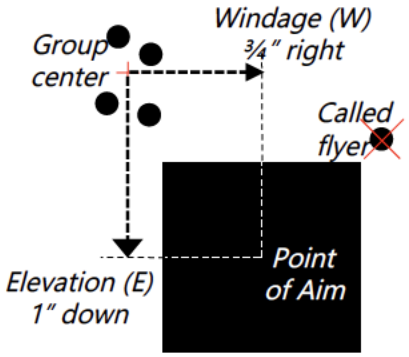

Figure 6 - IMC - Inches

Step 2 is Minutes
Now that we know how many inches to move the group, we have to convert that to an angle so we can adjust our sights to close down the angle between our shot group and the target. Recall that we are shooting at about 25 yards today and that 1 MOA is represented by ¼ inch at this distance. If we want to move our group down by 1 inch, how many MOA do we need to move?

That's right, 4 MOA. Let's record that in the table along with the direction
[PAUSE: WRITE 4 DOWN IN THE ELEVATION BLOCK FOR MINUTES]

In order to move our group ¾" to the right, how many MOA do we need to move? Remember that 1 MOA is represented by ¼ inch at this distance.

Yes, 3 MOA. Record this information in the table and remember to include the direction!
[PAUSE: WRITE 3 RIGHT IN THE WINDAGE BLOCK FOR MINUTES]

Step 3 is Clicks
The final step is to actually make the adjustment on our sights. We call this part "clicks"

because most sights and scopes make a click sound when they are adjusted by one increment. To know how many clicks are needed to make an adjustment we must first know our specific sights or scope. We will talk about clicks for iron sights first, then cover scopes.

Iron sights are typically about 1 click per MOA.
[PAUSE: WRITE IRON = 1 C / MOA]

This can vary between different types of sights, for example, some sights are 2 clicks per MOA. The manual for your sights is a good place to find this information. A table of common sight adjustments is also in the Guidebook to Rifle Marksmanship. The direction to move iron sights can be remembered using the acronym FORS:
[PAUSE: WRITE FORS]

Front Opposite, Rear Same. For example, to move the POI down and to the right move the rear sight the same (down and to the right) or move the front sight opposite (up and to the left).

If we were using typical iron sights in the example, how many clicks would we need for Elevation? Right, 4 clicks down. Let's record that in the table.
[PAUSE: WRITE 4 DOWN IN THE ELEVATION BLOCK FOR CLICKS]

How many clicks would we need for Windage? Yes, 3 clicks right. This one goes in the table, too.
[PAUSE: WRITE 3 RIGHT IN THE WINDAGE BLOCK FOR CLICKS]

Now let's look at scopes. Scopes have two adjustment turrets, one for elevation and one for windage, and, typically, the click value and direction is printed on the dial. For example, the dial may say 1 click = ¼ MOA, or equivalently, 1 click = ¼" at 100 yards. This means that it would require 4 clicks to move a shot group 1" at 100 yards, or we could interpret the scope as being 4 clicks per MOA.
[PAUSE: WRITE SCOPE = 4 C / MOA]

This is a very common adjustment for scopes and the one that we will use today; however, there are scopes that adjust by different values and it is important to understand your specific equipment. Feel free to ask an instructor if you need help interpreting the markings on your turrets.

To make adjustments on a scope that is 4 clicks per MOA for our example, how many clicks would we need for Elevation? If we look at our table, we see that we need to move 4 MOA, then we multiply that by 4 clicks/MOA and find that we need 16 clicks down. Let's record that in the table.
[PAUSE: WRITE 16 DOWN IN THE ELEVATION BLOCK FOR CLICKS]

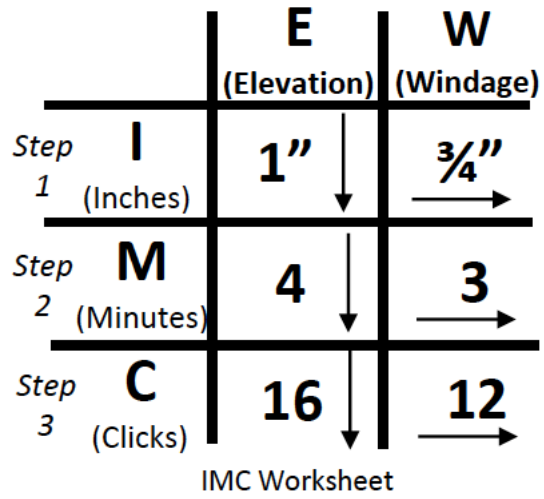

Figure 7 - IMC - Capturing IMC Info

How many clicks for Windage? Our table tells shows 3 MOA, then we multiply that by 4 clicks/MOA and end up with 12 clicks right. Record this in the table, including direction. [PAUSE: WRITE 12 RIGHT IN THE WINDAGE BLOCK FOR CLICKS]

That's the entire process for IMC, or zeroing your rifle. By knowing a little about angles and the sighting system on your rifle, you can quickly and easily move your shot groups on to your target. You can use this at any distance and you don't need special, gridded targets.

What are your questions about IMC?

It's time for you to do IMC on your own targets. What is the very first question you will ask when you look at your target?

Right, is my group 6-8 MOA or smaller and does it have a discernable center?

If you have a good group, what is Step 1 of IMC?

That's right, Inches. Measure distance and direction to move group to target.

What is Step 2?

Step 2 is Minutes, converting the inches we measured in Step 1 to MOA.

What is Step 3?

Exactly, Clicks, or converting minutes to clicks.

What are you going to do with this information?

Write it down! Remember to write both the value and the direction.

A Rifleman's memory lasts about 24 yards and we are shooting close to 25 yards today, so it's very important to write everything down. Also, if you accidently make an adjustment in the wrong direction, you have a record and can back out the incorrect adjustment before making the correct one. Has anyone here ever made an incorrect IMC adjustment --- I know I have. Write it down!

One more word of caution. It's very tempting to want to go to your rifle and make these adjustments immediately. Please wait until the Line Boss puts us in prep before touching your rifle. Now, let's look at your targets and do IMC.

Chapter 21: Carding the Sights & Rifleman's Cadence

Carding the Sights and Rifleman's Cadence Framing

These two topics can be taught together, as they are often combined in a drill to reinforce the foundation of Natural Point of Aim. Your Shoot Boss may choose to run a separate drill for Rifleman's Cadence. However, whenever performing a Carding the Sights drill, you should direct that shots be fired in Rifleman's Cadence.

Now let's discuss Rifleman's Cadence

A Rifleman always takes well-aimed shots as rapidly as they can be accurate. We call this process Rifleman's Cadence. It requires a shooter to acquire an effective NPOA, trust it, and then fire all shots at consecutive Respiratory Pauses. Using normal breathing, it results in one aimed shot every 3-5 seconds or accurately placing rounds on target at a rate of 15-20 rounds per minute.

Next, let's discuss Carding the Sights

Carding the Sights is a drill that reinforces Natural Point of Aim and provides immediate feedback to the shooter. The drill involves obscuring the shooter's sights relative to the target, having the shooter take a couple of breaths, and then restoring his sight picture. The shooter can observe how the sights moved during his breathing cycle and can work on establishing a better NPOA.

And now the Combined Drill

This drill combines Carding the Sights and Rifleman's Cadence. These two concepts work well together because Carding the Sights helps refine NPOA. Finding and trusting NPOA is critical to firing in Rifleman's Cadence. When we combine the drill, the structure looks like this:

- First, teach Rifleman's Cadence.
- Next, discuss Carding the Sights.
- Brief the students on the combined drill.
- Finally, demonstrate the drill to the students using an Instructor Model.
- Provide final comments and ask for questions.

Carding the Sights and Rifleman's Cadence Example

Shooters, Your Preparation Period begins now!

"Shooters! The line is HOT! The line is HOT! Eyes and ears, everyone!"

The coach will observe if the shooter has built a solid prone position using the Steady Hold Factors. Make sure you correct any errors you see throughout this process. <PAUSE WHILE COACH CORRECTS A SHF>

The coach tells the shooter to load and he does so. <SHOOTER MIMICS LOADING> Then, the shooter goes through the steps to establish a good Natural Point of Aim: With a relaxed body, close your eyes. Take a deep breath. At the end of a normal exhale, open your eyes and look at

your sights. If the sights are not in the black, shift your body about your fixed support elbow and go through the cycle again. Do not muscle the rifle, but rather shift your body to bring the sights back to where you want them. The shooter will likely need to adjust his NPOA like this a few times. <PAUSE FOR MODEL TO GET FIND NPOA>

When the shooter is satisfied that he has his NPOA on target, he will indicate it to the coach. We recommend that the shooter wiggle a support side finger so his NPOA remains undisturbed. <SHOOTER WIGGLES SUPPORT-SIDE FINGER>

At this point, the coach will block the shooter's sight picture by placing a card in front of his rear iron sight, or his scope, and instruct the shooter to take two normal breaths.

The coach will watch the shooter's back. The shooter will take two breaths. At the beginning of the next inhale, the coach should lift the card. The shooter should track the sights through the breathing cycle. When the shooter reaches his respiratory pause, at the end of his normal exhale, he should observe where the sights are. If the sights are anywhere in the black, he should go ahead and take the shot and continue to do so at the end of EVERY normal exhale. HOWEVER, if the sights do not return to the target, the shooter will say, "Lost it." THE SHOOTER SHOULD NOT TRY TO MUSCLE THE SIGHTS BACK ON TO TARGET.

The coach and shooter will begin the drill again. The shooter will shift his NPOA. <PAUSE AS SHOOTER ADJUSTS>

When the shooter has his NPOA on target, he will indicate it through a subtle movement. The coach will block the shooters sights with the card again, observe 2-3 breaths and then lift the card.

If the shooter observes that his sights come back on target at the respiratory pause, he will begin firing at Rifleman's Cadence. <PAUSE WHILE SHOOTER SIMULATES FIRING WITH DUMMY RIFLE>)

When a shooter has completed the drill, he may make his rifle safe and leave the Line.

Here's some things to know before we perform this drill:

- Please bring a magazine prepped with 6 rounds with you to the line.
- We will be shooting in the prone position.
- Do not LOAD until your coach directs you to.
- While waiting for your coach, use this opportunity to practice finding your NPOA and dry firing.
- Once everyone has completed the exercise you will hear the command "Cease Fire! Cease Fire! Cease Fire!"

What questions do you have about how we will conduct this drill? Shoot Boss, is there anything you'd like to add?

<u>Final Thoughts on Carding the Sights</u>

Now that we've shown you how to demonstrate the drill, here's a few "pro tips" for you as an

instructor when you're acting as a coach:

In the instance of a high student to instructor ratio, the Shoot Boss may elect to have students act as "coaches" and pair up with a shooting buddy to conduct the drill. One student will shoot while the other cards the sights, then they will swap roles. In that case, your job is to ensure that the drill is being conducted properly. (This should be avoided if possible.)

When you are acting as the coach, you should observe that the shooter gets in a proper position, utilizes the proper NPOA technique, and follows the 6 Steps of Firing the Shot and Rifleman's Cadence. Correct errors immediately, by saying "STOP" and reminding the shooter of the proper procedure.

Here's some of the errors we see shooters make:

- It is common to see a shooter struggle to find his NPOA because he is tensed up. You'll often see him in an uncomfortable or "scrunched up" position through his shoulders.
- Next, know that it is VERY uncommon for shooters, especially new ones, to quickly find NPOA. If the shooter claims he immediately has his NPOA, the coach should confirm that he went through the entire process and what he saw through the sights.
- Another NPOA-related issue is the shooter who claims to regain his NPOA, but hasn't actually shifted his body. The shooter might not be aware that he's muscling the rifle. Coaches should be ready to talk through the three steps of finding NPOA, then shifting it back onto target.
- Similarly, when the coach lifts the card for the first time, it is rare that a shooter actually has a good NPOA. Often the shooter will muscle the sights back onto target when he realizes that his NPOA is off target. There are a few tell-tale signs that he is doing this. First the shooter may pause briefly, squint or pick his head up a bit as he moves. You can also watch the muzzle of the rifle to see if the shooter is muscling it.
- Finally, the coach should ensure that shots are being fired using Rifleman's Cadence and at the respiratory pause.
- If the shooter fires at any time other than his respiratory pause, immediately stop him and make the correction using positive commands. Then begin the exercise again. If the issue can't be corrected in live fire, some time spent dry firing at the respiratory pause may help correct the issue.
- However, if the shooter simply fails to fire at the respiratory pause, it's an indication he does not have a proper NPOA or it's not pointed at the target. Stop the drill, get feedback from the shooter, and coach as appropriate. Then begin the exercise again.

Remember, Carding the Sights is a subtle drill that requires the shooter to exactly follow your instructions and for you to observe minute indications of technique. While you can't look through the sights FOR your shooter, you can guide him through the steps and describe what he should be seeing to achieve success.

Chapter 22: Rifleman's Bubble & Rifleman's Dance

Introduction

These two topics are unique in that we are transferring information only, versus the typical demonstration and shooting drill that are common when teaching other POIs. That said, it is still important that we frame both topics so the shooter understands the rationale of the topic and when it should be applied.

Both the Rifleman's Bubble and the Rifleman's Dance are more advanced topics and should only be taught once the shooter has been taught all the fundamental POIs and has completed plenty of strings of fire. This is typically done on the second day of a 2-day Appleseed. We also recommend that these two topics are taught together.

Rifleman's Bubble Framing

Again, The Rifleman's Bubble should only be introduced once the shooter is well-practiced at the fundamentals – Steady Hold Factors, NPOA, and the Six Steps to Firing the Shot. The most important thing to convey is that the Rifleman's Bubble is the mental state that the shooter achieves when they focus all their concentration on the task of shooting. In fact, it is common that the shooter will experience a tunnel vision-like focus between themselves, their rifle and the target and will become oblivious to any distractions.

Rifleman's Bubble Example

Shooters, gather around me! I'd like to share with you what we call the Rifleman's Bubble.

If you reflect on our instruction so far, you'll realize that we've covered a lot – Steady Hold Factors for 3 positions, The Six Steps to Firing the Shot, Natural Point of Aim and much more. We've also had the opportunity to do quite a bit of shooting.

How many people have noticed that things which seemed impossible at first - like the loop sling, shooting at respiratory pause, or squeeeeeeezing the trigger - are now becoming more automatic?

For those of you that have, that's a good thing! We call this the "Rifleman's Bubble". The Rifleman's Bubble is a state of intense focus when all your concentration is on yourself, the rifle and the target, and you become oblivious to outside distractions. For me personally, I feel an almost Zen-like connection between my rifle and the target and the physical part of shooting is nearly unconscious. The more you practice the fundamentals exactly as we are teaching them, the better chance you have to enter the Rifleman's Bubble.

However, the one thing that must pierce the Rifleman's Bubble is CEASE FIRE.

What are your questions about the Rifleman's Bubble?

Rifleman's Dance Framing

The Rifleman's Dance is the interaction between the shooter and feedback from the target during a shooting string. During the Rifleman's Dance, the shooter receives feedback from his target and decides how to respond to bring his shots back to their intended spot. This may seem contradictory to earlier instruction, where we have emphasized holding a constant sight picture in order to get good groups, regardless of where rounds are hitting.

However, if the shooter realizes that their bullets are not impacting their point of aim and there is a clear reason why, they should absolutely make a change. As such, this this POI should only be taught once the shooters have a good grasp of the fundamentals and are getting reasonable groups.

Rifleman's Dance Example

Shooters! The second topic is what we call "The Rifleman's Dance". Let me ask you a question - if you know that you have perfectly applied all the shooting fundamentals during a string of fire, but the bullet impacts aren't where you intended them to be, what should you do? Should you continue to fire exactly as you have been? Probably not!

The Rifleman's Dance is when the shooter makes a change to something in the shooting process based on the environmental feedback they receive.

Examples of this feedback might be things such as:

1-You are holding a good sight picture, but when shooting, see splashes of dirt in the berm off the left edge of the target. How would you respond?

2-You are lining up for a shot at a 400-yard target and you notice from the trees that the wind has picked up significantly. How would you respond?

In both cases you received feedback during a string of fire. You need to make a choice of what to do to bring rounds onto target – whether it is an adjustment to your NPOA, your position, your shooting technique or even an adjustment to the sights. When time is short and there is no opportunity for a sight adjustment, a different sight picture can be used.

What is critical when using the Rifleman's Dance is that you must be absolutely sure that your fundamentals were correct and that you are using Step 6B of The Six Steps of Firing the Shot – Call Your Shot.

What are your questions about the Rifleman's Dance? Shoot Boss, do you have anything you'd like to add?

Chapter 23: Known Distance at a 25m Event

Introduction

Some tips about teaching KD before we get started:

- While most of our shooting is accomplished at 25 meters and often with rimfire rifles, Project Appleseed is not a 22 long rifle club for kids. We are a serious, full-distance rifle program. Learning to shoot scaled targets at 25 meters is just the *first step* in a Rifleman's journey.
- Teaching KD at our 25-meter events is a program standard. Every shoot boss should plan and set aside time for this mandatory topic. Normally, this is done on Sunday.
- If we have the opportunity shoot 100 yards at a range during our 25-meter events, we should take the students out to that distance. It builds confidence. It reinforces the concepts of IMC. It allows shooters to experience the effect of trajectory in their own shooting, which helps solidify the concepts we teach during our KD block.
- Once an instructor has a solid KD presentation, she can tailor the instruction to the audience. Most audiences are ready for a moderate level of marksmanship discussion. Some will be ready for more, some less. In time, you'll become adept at adjusting your lesson as needed.
- Finally, I don't recommend pre-made boards or charts for KD presentations. First, they don't save you much time over drawing things as you go. Second, your students are not really focusing on what you're saying when they are looking ahead into your presentation. Lastly, these boards can become a crutch for the instructor. So, know the information well enough to draw it out as you go and students will follow along with you.

Introducing 25m Event KD Framing

When preparing to teach KD, we should approach the topic in an organized way. Thankfully, the heritage of Project Appleseed offers us a simple and precise plan that has a natural flow: The Three Challenges of a Rifleman. From time to time, I hear about the Four Tasks of a Rifleman or other things, but frankly that's incorrect. Let's not make it harder than it has to be.

A Rifleman has Three Challenges. They are: Target Detection, Range Estimation, and Making the Shot.

When we prepare to teach KD, it makes sense to use this to our advantage. A good 25m KD presentation has five sections:

- First, we introduce (or frame) the lesson
- Next, is Target Detection
- Then, Range Estimation
- Then, Making the Shot, which is the bulk of the discussion.
- Finally, a conclusion. It's also where we sell the next KD event.

I'll touch on each of these very briefly, as we'll have videos for each of the Three Challenges.

- During our Introduction, we frame the KD block, explaining: what, why, and how. This can be accomplished in just a few sentences. I will demonstrate that shortly.
- When we discuss the First Challenge of a Rifleman: Target Detection, we're giving a brief overview of the topic. This should take about 5 minutes.
- When we discuss the Second Challenge of a Rifleman: Range Estimation, we're using Rifleman math and very basic examples. The examples we use will be combined later with trajectory instruction to illustrate battlesight zero when we discuss Making the Shot. Range Estimation typically takes less than 10 minutes.
- When we discuss the Third Challenge of a Rifleman: Making the Shot, we tell shooters that solid fundamentals learned at 25m are good enough. To master the Rifleman's Quarter Mile, we simply add considerations for trajectory and wind. Cover the following subjects at a 25m event: trajectory, battlesight zero, and environmental effects. That's enough to fill about 20 minutes. If your students are really tracking, you can adjust on the fly and add more material as time allows. *By the way, don't confuse "wind" as a challenge or task for a Rifleman. It is one of the environmental considerations in Making the Shot.*
- In our Conclusion, we emphasize that Appleseed is a full-distance shooting program and KD is a lot of fun. Let them know that they don't need fancy gear. KD is about skills - not equipment. Be ready to share the dates and locations of Known Distance events in your local area and surrounding states.

Here is a list of topics you can avoid during your presentation: ballistics calculators, chronographs, reloading, Coriolis effect, spin drift, twist rate of barrels, and shooting beyond the Rifleman's Quarter Mile. They just aren't needed for KD.

So, this is the framework for teaching Known Distance at 25-meter events. Teaching KD might seem intimidating, but if you approach it methodically, you'll find it's not difficult. However, it does require some planning and a bit of practice.

Next, I'll demonstrate teaching an intro for a KD.

<u>Introducing 25m Event KD Example</u>

Shooters, center up! We are going to learn about Known Distance (or KD) Shooting.

For most of this weekend, you've been shooting scaled targets at 25 meters. You're doing great, so let's talk about shooting at distances beyond that. Did you know that at its core, Project Appleseed is a full distance shooting program? That means we shoot full sized silhouettes at distances out to 500 yards. We call that distance the Rifleman's Quarter Mile.

To accomplish shooting at Known Distances out to 500 yards, a Rifleman uses the very fundamentals you're learning this weekend, plus considerations for trajectory and wind.

When shooting Known Distance, a Rifleman has three challenges. Those challenges are: Target Detection, Range Estimation, and Making the Shot.

That framing took less than a minute and it tells the students what they are about to hear.

Target Detection Framing

Let's frame Target Detection.

When we discuss the First Challenge of a Rifleman, Target Detection, we're giving a brief overview of the topic. At most, this should take about 5 minutes. Be precise in your terminology – this instruction is entitled Target Detection, not Target Identification. They are not the same.

A shoot boss has discretion about what to cover and how much, so long as we don't drift into modern tactics. It's important to remember we're not teaching snipers. Hunting analogies are pretty safe.

The structure of Target Detection is straight forward:

- First, an Introduction
- Second, Target Indicators
- Third, Scanning Methods
- and Finally, a Conclusion

In the Introduction, we frame the topic, touching on the what, why, and how.

When teaching Target Indicators, cover visual and auditory. With visual target indicators, include moving targets as it reinforces the idea of Minutes of Angle.

There are three scanning methods: Hasty Scanning, Deliberate Scanning, and Detailed Scanning. Briefly describe them.

Finally, conclude the lesson with a smooth transition to Range Estimation. Like any other part of KD at a 25m event, if the shooters are really enjoying the instruction, you can stretch it out a bit but beware of the dreaded Time Monkey.

Target Detection Example

The First Challenge of a Rifleman is Target Detection, so let's talk about that for a moment. Target Detection is the most difficult of the Three Challenges of a Rifleman. It's one we don't practice very often.

The most important reason for Riflemen to be able to effectively detect targets is because we are responsible for every round that leaves our barrel. When we squeeze the trigger, we must be absolutely sure of our target.

It sounds obvious, but you're not likely to hit a target you can't see. When it comes to seeing a target, you need to be able to see the target long enough for your brain to recognize it. Also, your brain must be able to visualize the target you're trying to detect. It's suggested we think smaller. Hunters in the woods will often look for parts of a deer rather than the whole deer silhouette.

Targets that don't want to be found often take advantage of shadows, which makes detection more challenging. On the other hand, people and animals are creatures of habit and often travel along predictable routes. For a Rifleman, PATIENCE is the key to successful Target Detection.

Most of our Target Detection will be visual, but there's more to it than just looking around. What are some of the visual indicators a Rifleman can use? Color, absolutely. Shape, that's a good one, too. There are things like shine, contrast, pattern, or even something that's changed or is missing. Going back to the deer example, a deer laying in an open field might press down grass we would expect to be standing up.

An astute observer might recognize there are very few straight lines or perfect circles in nature. These could also be visual indicators of a target.

Movement is yet another visual indicator. However, it's possible for an object to move too slow for us to detect. For the human eye to detect movement, an object must be moving at least 1 minute of angle per second. Let's think back to IMC. If a target is 400 yards away, how fast must it be moving for a Rifleman to detect the movement? That's right, at least 4 inches per second. Any slower and we'll miss it.

If a Rifleman is trying to detect movement, she looks in one area with her head very still. She focuses on one spot in the middle, being aware of movement within her field of view.

Noise is another possible indicator of a target, but it can be deceptive. It bounces around due to terrain and structures. Also, noise seems to travel further at night.

We've talked about what to look for, so let's talk about how to look. There are three methods to scan for targets. They are: Hasty Scanning, Deliberate Scanning, and Detailed Scanning. A Rifleman chooses his scanning method based on how much time he has to search for a target.

Hasty scanning is quick, like its name implies. A Rifleman will scan for about a minute. He'll scan from close to far focusing around paths which are most likely to be used by the target. The drawback to this method is that it can be jerky and details get missed.

Deliberate scanning is longer than hasty. Think 3-5 minutes. It's the same as hasty, but using optics. Optics will force a Rifleman to slow down to avoid jerks and jumps that skip over details.

Finally, there is detailed scanning. Detailed scanning has no time limit. The technique is to divide the search area into a grid. Scan each sector back & forth and then near to far. A Rifleman will look for target indicators rather than the target itself.

So, that's a quick overview of Target Detection. If you attend a Known Distance event, you'll get more detailed information and may have opportunity to practice this skill. It's challenging and a lot of fun.

Once a Rifleman has detected a target, the next step is to estimate the range to it. This brings us to the Second Challenge of a Rifleman – Range Estimation.

Range Estimation Framing

Range Estimation is one of the skills a rifleman must learn to be an effective full distance

Rifleman. We present Range Estimation as a necessary part of our 25-meter instruction. We teach this to reinforce the concepts of Inches-Minutes-Clicks, demystify shooting at longer distances, and so we can use the idea of Range Estimation when teaching Battlesight Zero. We want every American to own a centerfire rifle and be proficient in its use.

It's useful to have a white board or a KD target to illustrate some of the concepts. This presentation is often given on Sunday around lunchtime and the presentation will likely have to deal with some tired shooters. So, while the presentation is introductory, it may be a good idea to suggest to the shooters that they take some notes, as there is a small amount of Rifleman's math involved.

The structure of Range Estimation is pretty simple:

- First, frame the lesson
- Then, determine the MOA associated with your rifle's sights.
- Next, present simple Range Estimation
- Then, present more general Range Estimation
- Next, give examples

Finally, touch on the difference between first and second focal plane scopes

<u>Range Estimation Example</u>

Let's talk about Range Estimation, which is the Second Challenge of a Rifleman. If a Rifleman doesn't know the distance to the target, he's not likely to hit it at distance.

So how can we estimate range to a target? Can anyone share a method? Yes – using a laser range finder is an excellent method. There are other methods as well. For example, there is dead reckoning, pace counts, using a map, or even the old Football Field method taught by the Army. However, a Rifleman always has something with him to use for Range Estimation – the sights on his rifle.

This method of range estimation begins by determining the minutes of angle associated with your rifle's sights. This can be accomplished with iron sights or scopes, but requires a Rifleman to know her rifle.

She can do that by looking through her sights and comparing them to something she knows. Take a look at this Drill Target. We have learned the black square represents 4 minutes of angle at 25m. Note that I've widened these squares to represent widths of 5, 6, 7, 8, and 9 minutes of angle at 25m.

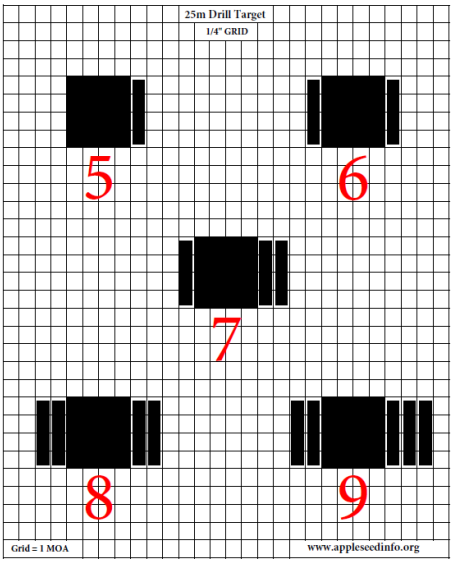

Figure 8 - 25m Drill Target for Range Estimation

You can look through your sights and find one which will match the size of the sights of your rifle in minutes of angle. Let's assume the sight is 7 minutes of angle wide.

Many service rifles (like the M16) are fitted with front sights which are 7 minutes of angle wide. These cover the width of a man-sized object, 20", at a distance of 300 yards. This supplies us with a simple method of Range Estimation. For example, suppose you are looking through your sights at a 20" object but don't know how far away it is. However, the front sight covers only half of that 20" object. How far away is the object? Yes, 150 yards. Then suppose you are looking at a 20" object but the front sight covers twice the width of the object. How far away is this object? Yes, 600 yards.

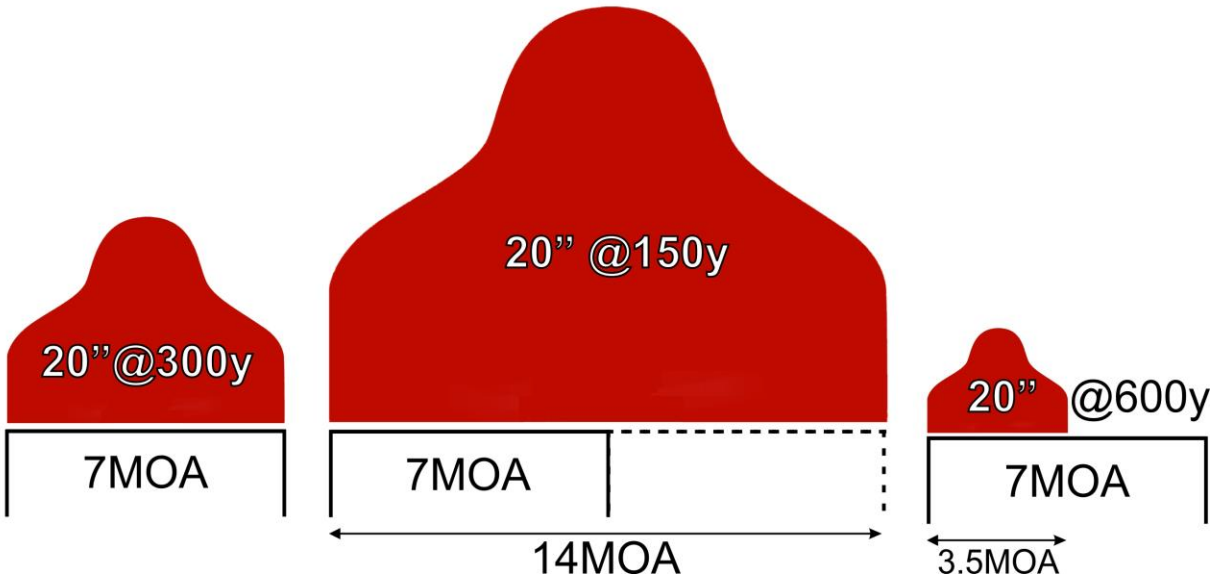

Figure 9 - Range Estimation (Simplified Diagram)

That's a quick way to approximate the distance to a man-sized object using your front sight, but we can generalize this process to determine the distance to any object. In order to do so we need to know two things: the size of the object in minutes of angle (MOA), as determined by your sights, and the size of the object in inches.

To illustrate this concept, let's consider the example above where your 7 MOA sights covered a 20" object at 300 yards. But for simplicity, let's assume that the 20" object is instead, a 21" object. Then since the object is covered by 7 MOA, according to your sights, the size of the object, in MOA, is 7.

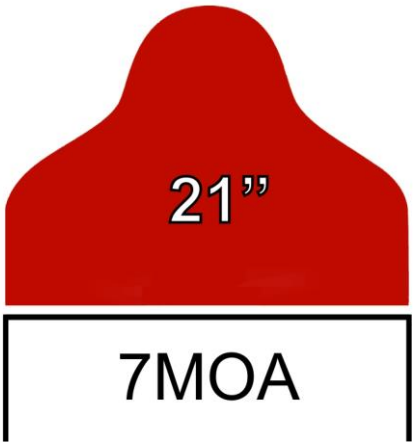

Figure 10 - Range Estimation (Simple Equation Illustration)

Suppose that we do not know the distance of this object. What we do know is that the size of the object in inches is 21 and that its size in MOA is 7. We want to find its distance. A simple formula will reveal this:

$$R_{(100)} = \frac{O(\text{inches})}{O(\text{MOA})}$$

where $R_{(100)}$ is the distance, or Range, in terms of hundreds of yards, O(inches) is the size of the object in inches, and O(MOA) is the size of the object in MOA. Applying this to our example,

$$R_{(100)} = \frac{21}{7}$$

R = 3, which means the distance is 300 yards.

As another example, consider the Giant Texas Jackalope, which, on the average, spans 36 inches end to end, and occupies 9 MOA in your sights. How far away is he?

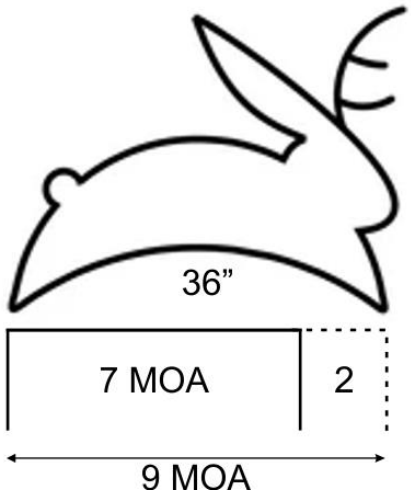

Figure 11 - Range Estimation (Jackalope)

$R_{(100)} = 36/9$

or 400 yards.

It is generally much easier to determine the object size in MOA with a scope than with a front sight, so we can talk about that briefly. Many scopes have reticles with MOA clearly marked, which is convenient. Some scopes have what's called a *duplex reticle* which consists of a pair of skinny lines between fatter lines, or other markings that we can use for this exercise.

If the scope is a *first focal plane* scope, the lines in the reticle change size with different magnifications. The result is that the spacing between lines remains consistent, in minutes of angle, for all magnifications. Therefore, for MOA-marked reticles, the size of the object in MOA can be read directly from the scope.

For other reticles, the scope owner's manual may tell you the spacing between marks in MOA. Lacking that, you can focus the scope on a ruler at 100 yards to determine how many inches lie between the marks. That represents the number of MOA associated with the distance between those marks – and you can use that measurement to estimate the size in MOA of objects you see in the scope.

For a second focal plane scope, the reticle does not change size as the magnification changes. Therefore, the spacing between reticle marks, in minutes of angle, will work properly at only one magnification. This information is typically supplied by the scope manufacturer. If not, the spacing in MOA can be determined by scoping-out a ruler at 100 yards, as discussed above. Furthermore, by using the ruler at 100 yards, it is possible to find another magnification which may fit a more convenient number of MOA between the markings.

What are your questions about Range Estimation?

So, now that you know how to estimate range to the distant target, it's time to talk about the Third Challenge of a Rifleman, Making the Shot.

Making the Shot (Trajectory & Come-ups) Framing

This is a segment that may need to be tailored to your particular audience. A group of inexperienced shooters may not be ready for some of the details of come-ups, for example. However, a group of attentive or experienced shooters might be ready to not only hear the material, but also to put it into practice.

A whiteboard is recommended for illustrating the concepts as you go. Diagrams that are neat and large enough for everyone to see the details are helpful in teaching with simplicity and precision. This is especially important since the KD block is usually presented around lunch on Sunday afternoon when shooters may be getting tired.

The structure of Making the Shot is straight forward:

- Frame the block to explain that marksmanship fundamentals combined with compensation for trajectory and wind allow accurate hits at longer distances
- Present the Rifleman's Quarter Mile to demonstrate that the fundamentals learned at 25 meters translate to longer distances.
- Introduce the concept of trajectory and the vocabulary used when describing it
- Demonstrate Height Over Bore as the major factor in determining bullet trajectory
- Present Come-Ups as a way to make accurate hits on targets at various distances
- Introduce Battlesight Zero and relate it to Range Estimation
- Finally, we close out by asking what questions shooters have.

Making the Shot (Trajectory & Come-ups) Example

A Rifleman has solid marksmanship fundamentals and the ability to compensate for trajectory and wind to make hits on full sized targets at distances out to 500 yards. We call that distance the Rifleman's Quarter Mile.

We have been developing the first skill, marksmanship fundamentals, at 25 meters using targets scaled to simulate shooting at longer distances. Let's take a moment to consider those fundamentals and how they translate to longer distances. For the rest of this discussion, I'm going to use 25 yards instead of 25 meters. The difference between those two is not significant for the basic concepts.

Recall our discussion of IMC and MOA.

[PAUSE: DRAW STRAIGHT LINE, 1 MOA LINE, LABEL DISTANCES]

We learned that 1 MOA is represented by 1/4 inch at 25 yards, which explains the grids on the squares targets we have been using.

[PAUSE: ADD ¼ inch at 25 YARDS TO DIAGRAM]

As we moved out to longer distances, the 1 MOA remains the same, but the separation between the lines grows larger. For example, at 100 yards that same 1 MOA is represented by 1”

[PAUSE: ADD 1 INCH AT 100 YARDS TO DIAGRAM]

At 200 yards 1 MOA is represented by 2”

[PAUSE: ADD 2 INCHES AT 200 YARDS TO DIAGRAM]

Similarly, at 300 yards it is 3”, at 400 yards it is 4” and at 500 yards it is 5”.

[PAUSE: ADD 3, 4, 5 INCHES TO DIAGRAM]

Let’s go back to the squares targets and consider the squares themselves rather than the grids. What size is each square in MOA?

[PAUSE: SHOW SQUARES TARGET]

Right, each square is 1” and that represents 4 MOA at 25 yards. As a shooter, if you are able to keep all of your shots within a square, then all of your shots are within 4 MOA. Let’s go back to our diagram and consider 4 MOA at distances longer than 25 yards.

I’ll add a line to our diagram that represents 4 MOA rather than 1 MOA.

[PAUSE: ADD 4 MOA LINE TO PREVIOUS DIAGRAM]

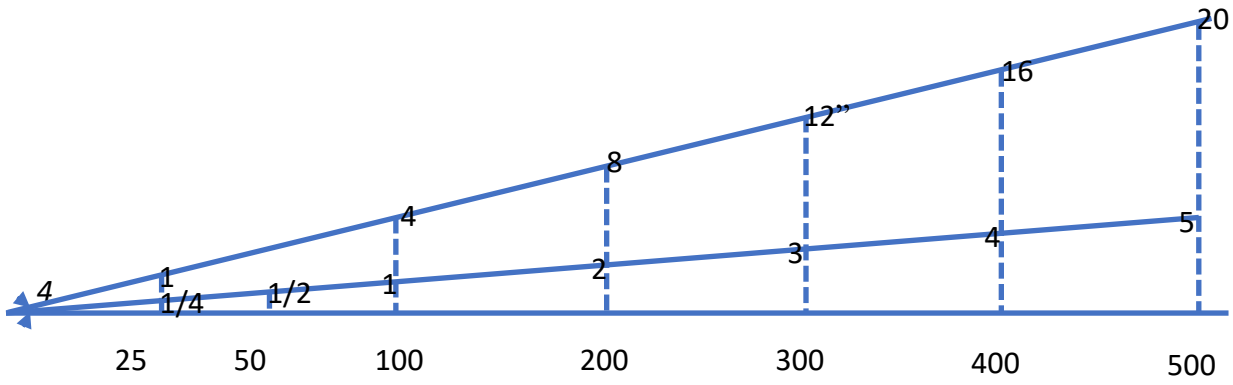

Figure 12 - Minutes of Angle Illustration (Rifleman’s Quarter Mile)

We said that at 25 yards 4 MOA is represented by 1”.

[PAUSE: ADD 1” AT 25 YARDS]

Moving out to 100 yards, what is the separation in inches between the 4 MOA lines?

Right, 4".

[PAUSE: ADD 4" at 100 yards***]

We can continue this to 200 yards and see that the separation is 8",

[PAUSE: ADD 8" at 200 yards***]

At 300 yards it is 12",

[PAUSE: ADD 12" at 300 yards***]

At 400 yards it is 16",

[PAUSE: ADD 16" at 400 yards***]

and, finally, at 500 yards it is 20".

[PAUSE: ADD 20" at 500 yards***]

The same group of shots that are within a 1" square at 25 yards, or within 4 MOA, will still be within 4 MOA, at 500 yards, but they will be in a 20" square.

What is the average size of a man's chest?

It is about 20".

If you apply the fundamentals of rifle marksmanship to become a 4 MOA shooter, you will possess the capability to place all of your shots within a man-sized target at 500 yards, after compensating for bullet trajectory and the effect of wind. That is what we call mastering the Rifleman's Quarter Mile.

Fundamentals of Trajectory

Now, let's talk about trajectory of the bullet and how to compensate for it. I'll start with a very simple illustration. Consider two marbles on a table that is parallel to the ground.

[PAUSE: DRAW TABLE AND MARBLES]

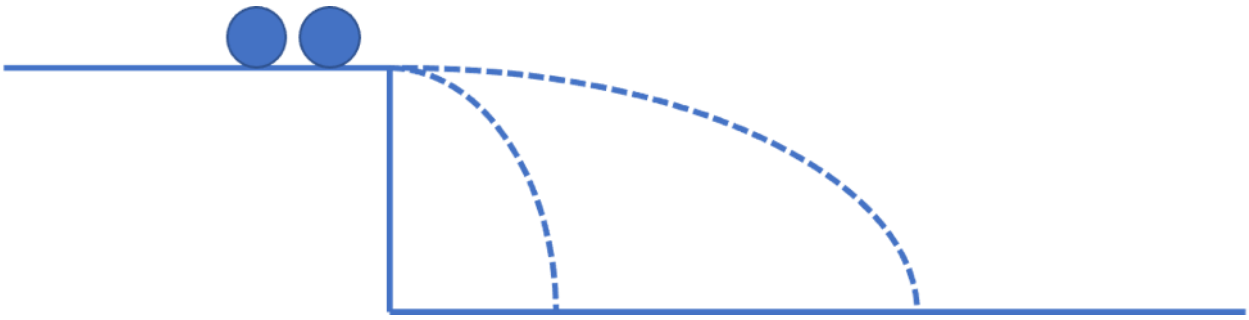

Figure 13 - Trajectory (Table & Marbles)

If both of the marbles are rolled off the table at the same time but one is moving much faster than the other, which will hit the ground first?

Correct, they both hit the ground at the same time. What causes the marbles to fall toward the ground? That's right, gravity!

[PAUSE: DRAW MARBLE TRAJECTORIES]

One goes farther than the other because of its initial velocity, but both hit the ground at the same time.

Each marble starts falling as soon as it leaves the edge of the table.

Instead of marbles, let's place a rifle barrel along the table.

[PAUSE: DRAW RIFLE BARREL IN PLACE OF MARBLES]

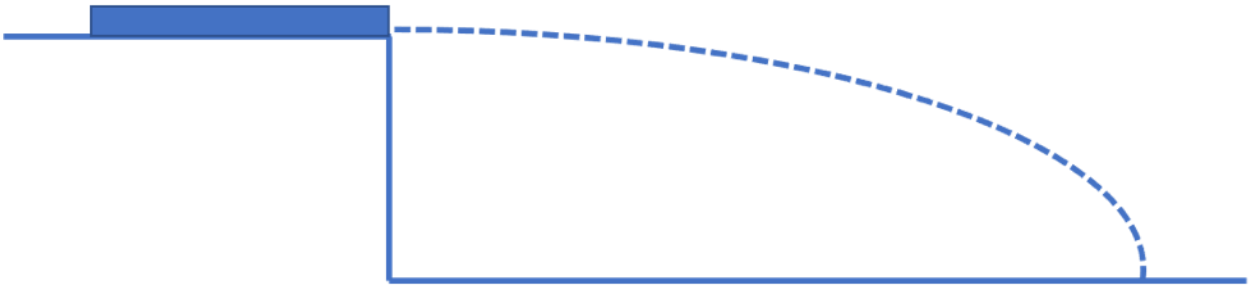

Figure 14 - Trajectory (Rifle on Table, Barrel Parallel to Ground)

If I fire a bullet from the rifle, what happens to that bullet when it leaves the barrel?

Exactly. The bullet behaves just like the marbles and starts to fall toward the ground as soon as it leaves the barrel.

[PAUSE: DRAW BULLET TRAJECTORY]

It travels farther than the marbles did, but it still hits the ground in the same time that it took the marbles to fall. Gravity affects a bullet the same way it does any other object.

When we are firing a rifle, we usually want to hit a target that is somewhere close to the height of our barrel, or our line of sight.

[PAUSE: DRAW TARGET ON LOS]

What would I have to do to the rifle barrel in the diagram to be able to hit a target at the same level as our line of sight?

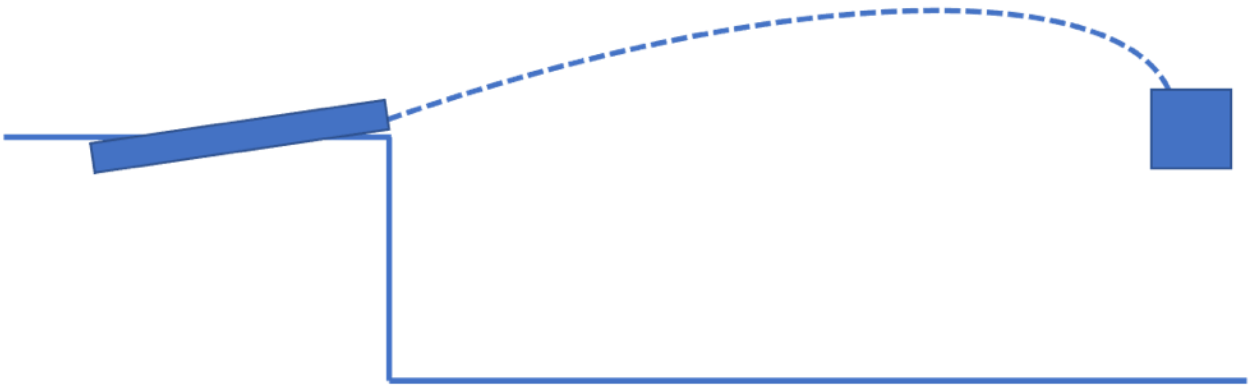

Figure 15 - Trajectory, Aiming Barrel Up)

That's right. We have to tilt the barrel up in order for the bullet to reach the target before falling to the ground.

[PAUSE: DRAW TILTED RIFLE BARREL]

The amount of tilt depends on the distance to the target. This is very similar to many of our everyday experiences. Have you ever been watering plants with a garden hose and reached the end of the length of your hose but still had plants that were out of reach? What do you do?

Yes, we tilt the hose up trying to reach that last plant. Similarly, when we throw a ball a long distance, we start by angling it upward. The further we need to throw the ball, the higher the angle we need. In all cases it's necessary to start at an upward angle so that the end of the arc of the water, or a ball, or even a bullet, hits where we want. That is the basic concept behind bullet trajectory. You probably didn't realize you were already a ballistics expert.

Let's talk about basic terminology of bullet trajectory.

[PAUSE: DRAW LOS, RIFLE, TRAJECTORY]

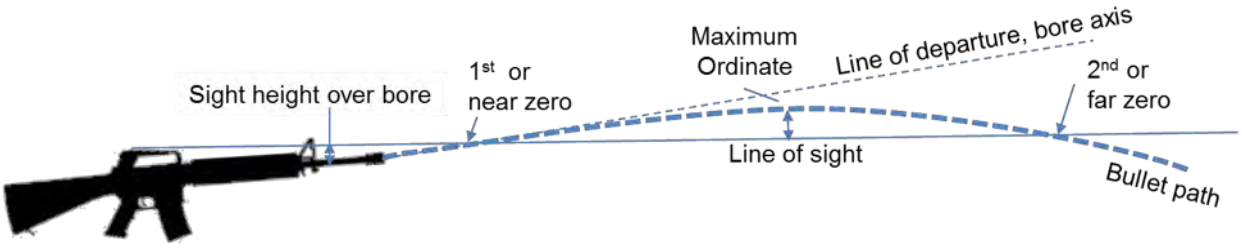

Figure 16 - Trajectory (Basic Terminology of Trajectory)

This diagram shows a rifle with a line of sight and a bullet trajectory, or the path that the bullet takes once it leaves the barrel. The rifle barrel is below the line of sight and angled upward so that the bullet crosses the line of sight once at the "near zero,"

[PAUSE: DRAW NZ]

Reaches a peak, then crosses again at the "far zero."

[PAUSE: DRAW FZ]

The highest point in the trajectory is known as the "maximum ordinate."

[PAUSE: DRAW MO]

The "sight height," or "height over bore," (HOB) for a rifle is the distance from the center of the barrel to the center of the sighting system. The height over bore sets the initial angle of the barrel with the line of sight and determines the trajectory. For a low height over bore rifle, for example an M1 that is zeroed with a near zero of 25 yards, the far zero will be about 200 yards.

[PAUSE: DRAW 25 YARD NZ AND 200 YARD FZ]

For a rifle with a high height over bore, for example one with a scope or a carry-handle sight AR 15, the far zero will be about 300 yards because the barrel has to be angled more to obtain sight alignment.

[PAUSE: DRAW 25 YARD NZ AND 300 YARD FZ]

Note that I haven't mentioned the caliber of the round being fired. The far zero is determined primarily by the height over bore rather than the caliber of the bullet.

Now that we've covered the basics of trajectory, we can talk about how to work with it. The sights on a rifle can be adjusted, or zeroed, so that the near zero or far zero cross the line of sight at a specific distance. Let's consider an AR 15 with carry handle sights, or high height over bore, and set the zero so that we hit a target at 100 yards. That is a special zero for this rifle because the near zero and the far zero are at almost the same point.

[PAUSE: DRAW START OF COME-UP DIAGRAM]

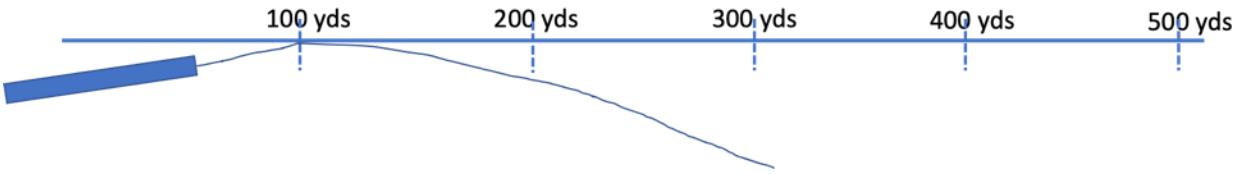

Figure 17 - Trajectory (Beginning of Come-Up Diagram)

We take the shot and hit in the center of the target because we are Riflemen. Now we want to take a shot at a target that is 200 yards away. If we do not change our current zero, we see that we will hit the target low. What do we need to do in order to hit the target in the center at 200 yards?

Correct, raise the barrel, or come up, to a higher angle. Next, we need to determine how far to come up. I will tell you that the amount you missed by is approximately 4".

[PAUSE: DRAW 4" AT 200 YARDS]

Thinking back to IMC, how many MOA is 4" at 200 yards?

Correct, 2 MOA. We need to raise our rifle barrel by 2 MOA, or make a +2 MOA sight adjustment, to hit the target.

[PAUSE: DRAW 2 MOA COME UP]

These come-ups are typically found in a table format. I'm going to create a come-up table as we go along because we will need it later.

[PAUSE: DRAW COME-UP TABLE]

So, we make that +2 MOA sight adjustment, take the shot, and hit in the center of the target.

[PAUSE: DRAW 200 YARD TRAJECTORY]

Are we going to stop there? No, we are Riflemen and want to make shots at longer distances. We decide we want to engage a target at 300 yards. If we try to make that shot without adjusting our current sight settings, where would we strike the target?

Right, we would hit low. What do we need to do in order to hit the target in the center at 300 yards?

Correct, raise the barrel, or come up, to a higher angle. I will tell you that the amount you missed by is approximately 6".

[PAUSE: DRAW 6" AT 300 YARDS]

Thinking back to IMC, how many MOA is 6" at 300 yards?

Correct, 2 MOA. We need to raise our rifle barrel by 2 MOA, or make a +2 MOA sight adjustment, to hit the target.

[PAUSE: DRAW 2 MOA COME UP]

So, we make that sight adjustment, take the shot, and hit in the center of the target.

[PAUSE: DRAW 300 YARD TRAJECTORY]

We can continue this same process at longer distances. Basic come-ups out to the Rifleman's Quarter Mile for an AR 15 are 2, 2, 3, 4.

[PAUSE: DRAW REMAINING COME-UPS]

This information can be used to engage a target at any of these distances by making the proper adjustment. For example, if my current zero is set at 100 yards and I want to engage a target at 300 yards, add the come-ups for 100 to 200 and 200 to 300 to get 2+2= +4 MOA sight adjustment.

They can also be used when moving from a longer distance to a shorter one. For example, if my sights are set at 400 yards and I want to come back to 200 yards, add the come-ups for 400 to 300 and 300 to 200 to get -3-2 = -5 MOA.

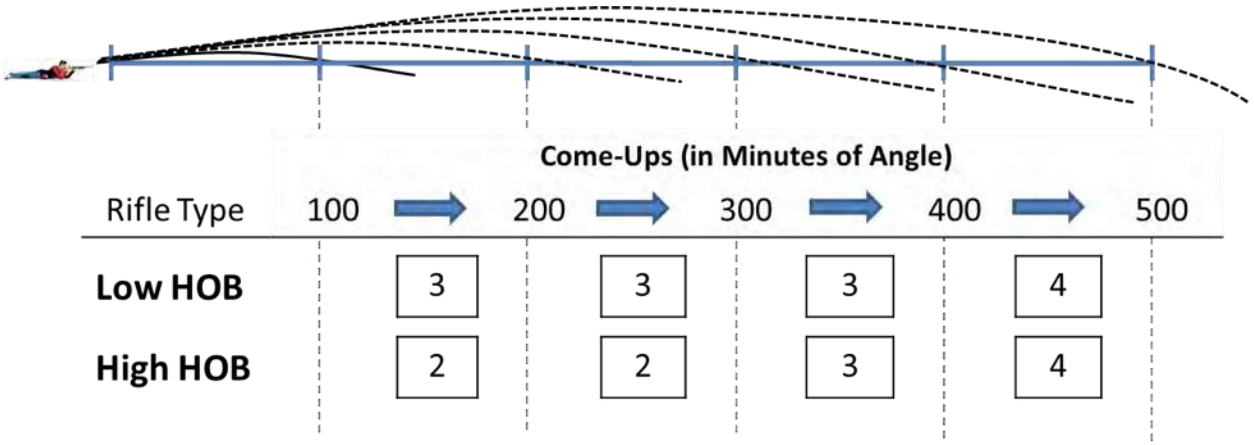

Figure 18 - Trajectory (Come up Diagram Complete)

For a low height over bore rifle, the basic come-ups out to the Rifleman's Quarter Mile are 3, 3, 3, 4.

[PAUSE: DRAW VALUES IN COME-UP TABLE]

These are approximate numbers that are good enough to get you on paper. The specific come-ups for your rifle will vary depending on your sight height over bore, rifle characteristics, and, to a lesser extent, the ammunition used. To know your rifle well, like a Rifleman, you will need to shoot your rifle and ammo at these ranges and calculate your own come-ups.

Battlesight Zero

This knowledge of trajectory can be put to use in what is called Battlesight Zero (BSZ), or Maximum Point-Blank Range.

[PAUSE: DRAW BSZ DIAGRAM]

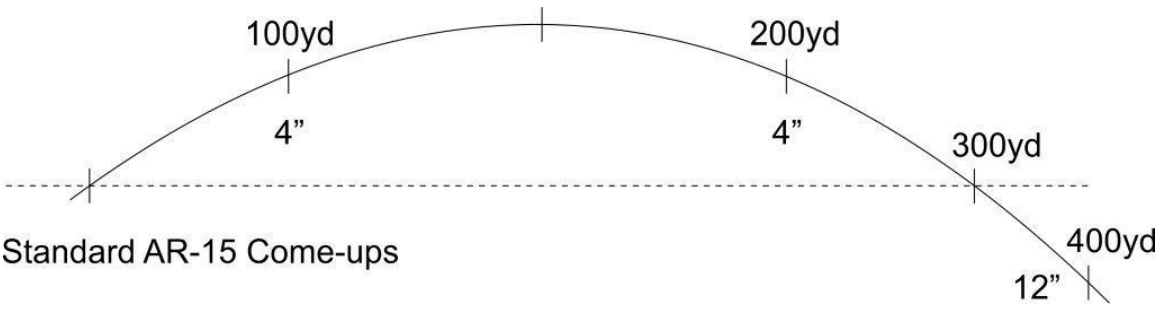

Figure 19 - Battlesight Zero

When the sights of a modern centerfire rifle, such as the AR15, are zeroed at 300 yards, successful hits can be made on targets out to that distance without having to make sight adjustments and by maintaining point of aim at the center of the target.

We can use the come-up table to confirm this. With our sights set at Battlesight Zero, 300 yards, we aim at the center of a target at 200 yards and take the shot. According to the come-up table, there are 2 MOA difference between 300 and 200 yards. What is 2 MOA at 200 yards in inches?

Right, if 1 MOA at 200 yards is 2", then 2 MOA at 200 yards is 4". Our shot would hit 4" high if we made no sight adjustments and aimed at the center of the target at 200 yards. That's a good hit.

[PAUSE: DRAW 4" AND TARGET AT 200 YARDS***]

Let's look at what would happen if we kept our sights set at Battlesight Zero, aimed at the center of a target at 100 yards, and took the shot. Referring back to the come-up table, from 300 to 100 yards there is a total of 4 MOA difference. What is 4 MOA at 100 yards in terms of inches?

That's right. 4 MOA at 100 yards is 4". Our shot would hit 4" high if we made no sight adjustments and aimed at the center of the target at 100 yards. That's a good hit.

[PAUSE: DRAW 4" AND TARGET AT 100 YARDS***]

The Maximum Ordinate for this trajectory occurs between 100 and 200 yards. For this trajectory we will also get a good hit at MO.

[PAUSE: DRAW IN TARGET AT MO]

Let's consider what happens when we take a shot at distances longer than Battlesight Zero. If we continue as before and take a shot at a target at 400 yards without changing our sights or Point of Aim, will the hit be high or low?

Correct, low. How low? According to the come-up table there are 3 MOA between 300 and 400 yards. What is 3 MOA at 400 yards in terms of inches?

Right. If 1 MOA at 400 yards is 4", when 3 MOA is 12". Depending on our target, that might not be a hit. If we consider our target to be a 20" square, we would miss the target at 400 yards without making some type of adjustment.

[PAUSE: DRAW 12" AND TARGET AT 400 YARDS***]

We could either adjust our sights or change our Point of Aim in this case to get a good hit on target.

Range Estimation with Battlesight Zero

Battlesight Zero is a very effective sight setting for making successful hits on targets out to 300 yards without taking time to make sight adjustments or changing Point of Aim. One question that arises is how a Rifleman will know whether their target is within 300 yards. Recall the discussion of Range Estimation earlier when we discussed that many modern rifles are fitted with a front sight post that is 7 MOA, which is approximately the same width as a 20" target at 300 yards. If a target is the same width as the front sight post or larger, then the target can be engaged successfully with Battlesight Zero. If the target is smaller than the front sight post, the distance to the target is greater than 300 yards and some adjustment may be needed to make a successful hit. Battlesight Zero then is not only a way to quickly make hits on a target without making adjustments, but also a way to gauge the distance to the target.

We have shown that the marksmanship fundamentals you are practicing here today at 25 meters are the same skills needed to make hits on a full-size target out to 500 yards. We've also learned about bullet trajectory and how to compensate for it at various distances to a target. With some practice you will be able to engage targets out to the Rifleman's Quarter Mile.

Making the Shot (Environmental Factors) Framing

At 25m events, we provide students with a short overview of the topic. At a bare minimum, we need to cover the effects of Wind. You may also touch on rules of thumb for temperature changes, elevation changes, and shooting on an incline.

Other factors such as bullet spin drift, humidity, and Coriolis effect do not need to be discussed unless brought up by a student… they have no appreciable effect at the distances we shoot in Project Appleseed.

Like other blocks of instruction, it's important that you write and draw very large so your audience can see what you're presenting.

Making the Shot (Environmental Factors) Example

When shooting at 25 meters, Riflemen can ignore most environmental factors because they have a negligible effect on bullets as they move to the target. However, when shooting at full distance, the Rifleman must consider environmental conditions and adjust appropriately to make first round hits.

Wind

Of all the environmental conditions a Rifleman must consider, wind usually has the greatest effect on bullet trajectory. Learning to compensate for the effect of wind is an art that requires thought and practice. Two components of wind must be estimated: Wind Speed and Wind

Direction.

Estimating wind speed is straight-forward. We can observe our environment and look for clues to the wind speed. The Guidebook to Rifle Marksmanship has examples you can reference.

For example, wind that is 3-5 miles per hour you can feel gently on your face.

A 15 - 20 mile~~s~~ per hour wind has brush and small trees in constant motion. <DRAW CIRCLE ON THE WHITE BOARD>

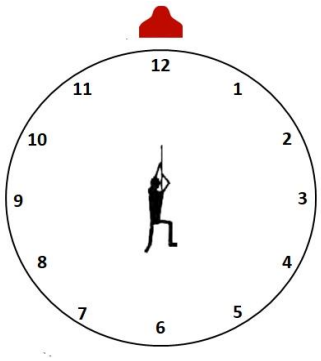

Figure 20 - Environmental Factors – Intro to Wind

When compensating for wind, always adjust into the direction the wind is coming from. Winds coming from directly behind you or directly in front of you require no adjustment because they have no effect on the direction of your bullet. We call these "no-value" winds. <DRAW ARROWS and LABEL NO VALUE>

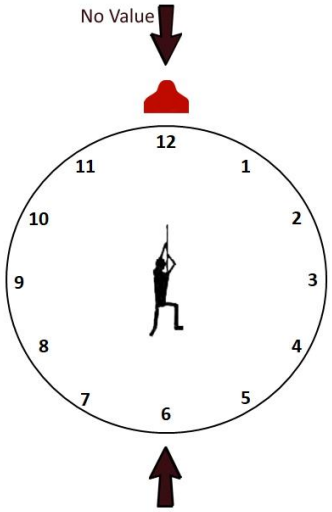

Figure 21 - Environmental Factors - No Value Wind

However, wind from your right or your left, at 90 degrees with respect to the path of the bullet, will affect the bullet in flight and must be compensated for. We call these winds perpendicular

to the path of the bullet "full-value" winds. <DRAW ARROWS and LABEL FULL VALUE>

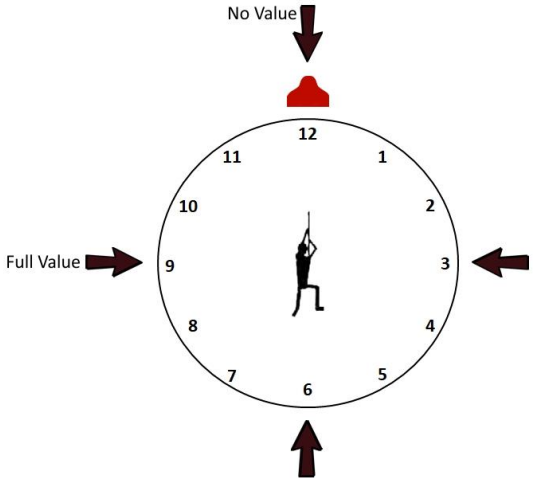

Figure 22 - Environmental Factors - Full Value Wind

Winds at other angles towards you or away from you require a separate calculation to compensate with precision. However, these winds may be treated with some rough approximations.

For example, winds at 30 degrees are "half value" winds. Corrections for them are only half those of full value winds. <DRAW ARROW and LABEL HV>

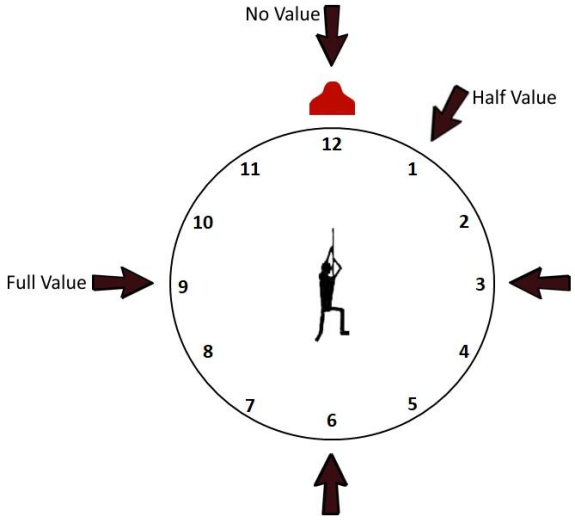

Figure 23 - Environmental Factors - Half Value Wind

Winds at smaller angles can be reasonably considered as "no-value" winds. <DRAW directional ARROW>

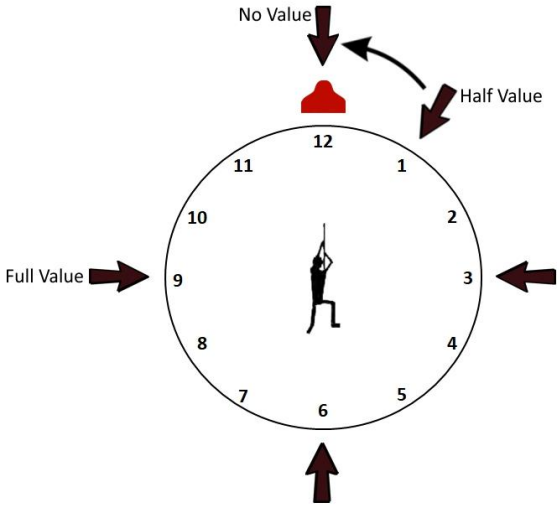

Figure 24 - Environmental Factors - Smaller than HV Winds

Winds at 45 degrees, or larger, may reasonably be considered as "full-value" winds. <WRITE 45 and DRAW directional ARROW>

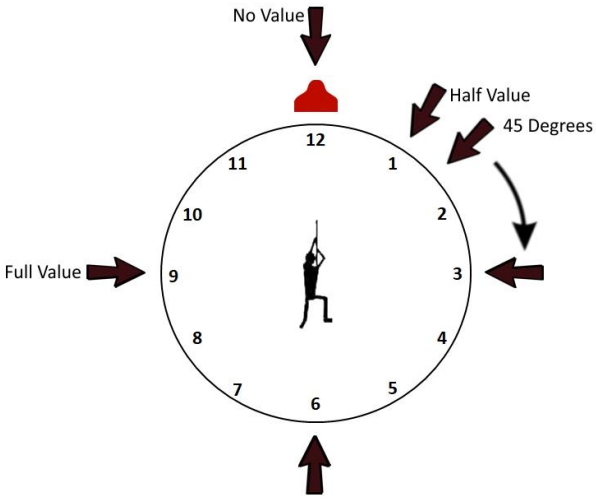

Figure 25 - Environmental Factors - Greater than 45-degree Winds

Our Founder, Fred, gave us a simplified wind rule: If the wind is strong enough you are concerned about it, hold into the wind 3 MOA at 300 yards and 5 MOA at 500 yards. This usually assumes a full value wind. If time is too short for you to do a little math, Fred's rule is good enough. <WRITE RULE ON THE WHITE BOARD>

Fred's Wind Rule:

3 MOA at 300 yards, 5 MOA at 500 yards

Figure 26 - Environmental Factors – Fred's Wind Rule

To be a bit more precise, use the Rifleman's Wind Rule, which is: correct into the wind one minute of angle per 100 yards of distance per 10 MPH of wind. Generally, there is no need to correct for distances less than 300 yards because normal aiming will place your rounds within a 4 MOA group. <WRITE RULE ON THE WHITE BOARD >

Rifleman's Wind Rule:

1 MOA per 100 yds per 10 mph

Figure 27 - Environmental Factors - Rifleman's Wind Rule

Here's an example: A Rifleman is shooting at a target 400 yards away in a 15 MPH full-value wind. Using the Rifleman's Wind Rule, the shooter would correct 1 MOA per 100 yards, per 10 miles per hour of wind. <DRAW DIAGRAM ON BOARD>

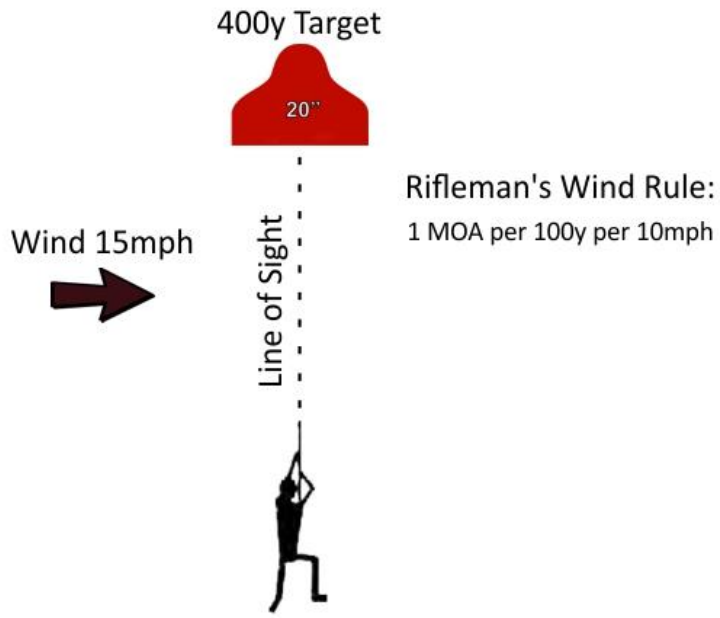

Figure 28 - Environmental Factors - Wind Example pt. 1

So that would be 4 MOA for the 400 yards for a 10 MPH wind, but 1.5 times that for the 15 MPH wind. Therefore, our Rifleman would correct 6 MOA into the wind. <WORK OUT EXAMPLE ON WHITE BOARD>

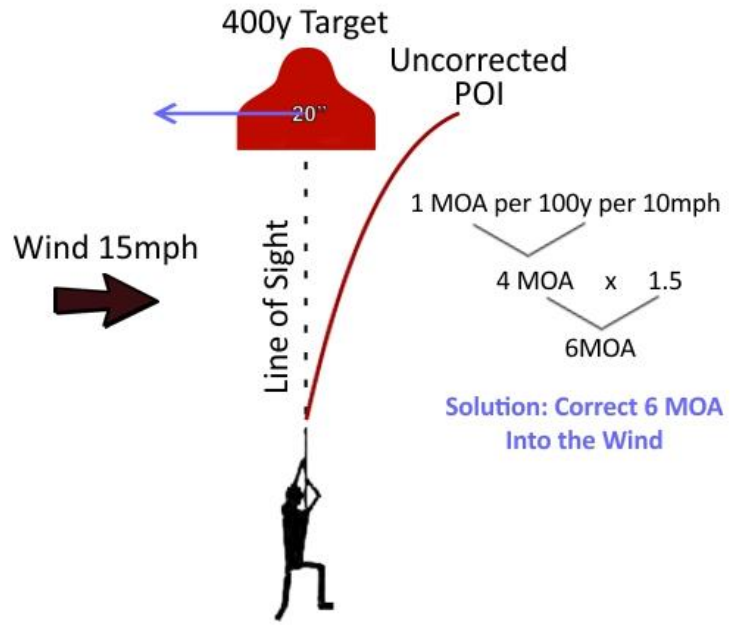

Figure 29 - Environmental Factors - Wind Example pt. 2

What questions do you have about wind?

Air Density

Some other environmental factors might need to be considered. Air density changes with altitude and with temperature. Both affect the flight of the bullet due to resistance.

- When temperature drops, the air density increases, offering more resistance. So, adjust up 1 MOA for every 20 degree drop in temperature
- When altitude increases, the air density decreases, offering less resistance. So, adjust 1 MOA down for every 5000 feet increase in altitude.
- The reverse of these rules is also true.
- Shooting up or down hill, always aim a bit low.

A Rifleman's goal when considering the environment is to make the appropriate adjustments to have first round hits at distance. All of the KD topics and skills we've discussed today are covered in much greater detail at Known Distance Clinics. KD events are fun and exciting. I hope to see you at one soon!

What are your questions about environmental factors in Making the Shot or anything about Known Distance Shooting?

Shoot Boss, is there anything you'd like to add?

BONUS MATERIAL

The following chapters are bonus material added to the Appleseed Academy Textbook.

Chapter 24: Ball and Dummy

This bonus chapter been added because there is no Appleseed Academy video on Ball & Dummy, but it is a vital part of our curriculum.

The Ball & Dummy Drill (B&D) is a peer coaching exercise that detects and cures problems. This drill has long been recognized as an essential cure for common anticipatory errors. Coaches in this exercise will shoot better because they will be more aware of these errors in their own shooting. This is a mandatory block of instruction in all 2-day 25m and RBC events.

Overview of Ball & Dummy Drill

The steps of B&D are simple:

1. The shooter gets into prone position and aims at the top left square of the 25m Drill Target.
2. The coach corrects any positional errors noted.
3. The coach loads the rifle with a dummy round.
4. The coach observes the shooter's reaction to the resulting 'click.'
5. If the shooter exhibits an anticipatory error, such as flinching, bucking, jerking, or blinking, the coach will advise the shooter to correct the error.
6. The coach will follow any noted errors with another dummy round to ensure that the error does not persist after initial correction.
7. Once any errors are corrected, the coach will then load a single live round into the rifle.
8. After firing the live round, the shooter will "Call the Shot" and mark his call on the witness target. The coach provides the shooter feedback. He may choose to whether to give the shooter a ball or dummy, restarting with step 3 or 7, as appropriate.
9. Shooter shifts aim to the next square.
10. Repeat steps 3-9 until all five live rounds are fired or time expires. Then swap places: coach becomes the shooter & the shooter becomes the coach. Rifles remain in the same position on the firing line during the swap. The shooters will move to another position, if needed.
11. Instructors must carefully monitor the shooter/coach pairs. Watch for safety and to ensure the coach is providing effective feedback, and mentor as appropriate.

Most shooters will be able to conduct this level of Ball & Dummy Drill, perhaps with a bit of coaching & assistance from an experienced Instructor or IIT.

How to teach Ball & Dummy Drill

Teaching the B&D is best done using three participants:

- An Instructor, who will talk the shooters through the demonstration
- **Model 1**, who acts as student-shooter
- **Model 2**, who acts as student-coach.

The block of instruction should be conducted in the following format:

- Framing – What & Why
- Demonstration – How it's done

- Execution – Shooters participate in the drill
- Review – TPI, lessons learned, Q&A.

Framing the Ball & Dummy Drill

"Shooters, Circle Up! The next block of instruction is the Ball & Dummy Drill – an exercise designed to diagnose, and correct, the common errors of flinching, bucking, jerking, and blinking. Each of you will get to coach another shooter, under the watchful eye of our Instructors. You will also benefit from personal coaching through an entire string of fire. Learning how to be an effective coach is critical to passing on the tradition of Rifle Marksmanship, so I recommend that you pay close attention to how to perform this exercise."

Demonstration of the Ball & Dummy Drill

The models need a rifle, an empty magazine, five loose rounds, and two 25m Drill Targets (one posted downrange and one at the firing line). Ideally, the rifle should be a magazine-fed rifle which does not require snap-caps to dry fire. The magazine[3] must be empty and the Instructor should show it to be such to all shooters.

When framing the block of instruction, **Model 1 (**the shooter) should get into Prone Position. **Model 1** may exhibit simple errors but keep it simple. **Model 2** (the coach) will take up the initial position at the Instructor's side. The instructor will possess the empty magazine.

A sample narrative: "We'll demonstrate the drill for you. Here, we have **Model 1**, modeling the Prone Position. **Model 2** serves as coach. First, he'll see if his shooter has a proper position. Next, he will identify any errors in executing the Six Steps or Natural Point of Aim.

The coach should start with a big picture view of the shooter's position. Without focusing on any one feature, does the shooter seem to have a generally correct position? If the position is correct, the coach should look at the individual Steady Hold Factors, starting with the Support Hand and continuing through the rest, offering correction as needed.

Model 2 here will be the coach for this exercise and will now examine his shooter's position."

(**Model 2** observes the position, and offers necessary corrections to **Model 1**)

"The coach has corrected any observed errors. What are your questions on identifying and correcting errors in position?

Once you have confirmed your shooter has a good position, you'll need to insert the magazine into the rifle. The first couple of times you do this, the magazine will be empty.

Here, we have an empty magazine. <Display empty magazine to all shooters.>

[3]Note: Certain rifles, such as the AR-15, and the M1A, have a bolt-hold-open mechanism, which will not allow the bolt to close on an empty magazine. A field expedient solution is to insert a coin (dime or penny, depending on magazine width) to hold the follower of the magazine down. Alternatively, the follower and spring may be removed from the magazine altogether. If disassembling a magazine for this exercise, extreme care should be taken to effectively control the release of spring tension on the follower spring. Eye protection is recommended.

Would you agree that this is an empty magazine?" <Shooters agree. Instructor hands empty magazine to **Model 2**.>

"When you are the coach, YOU will insert the magazine. As the shooter, you may need to adjust your position so the coach can do so, and then return to a good prone position. Let's see how that works."

Model 1 closes his eyes, showing that the shooters will not know if they have a live round or a dummy, and presents the magazine well to **Model 2**, who inserts the empty magazine.

"One of you, who, depends on the design of the rifle, will close the bolt. Regardless of who closes the bolt, the shooter should ignore whether a round is being chambered or not."

<Shooter or coach closes bolt.>

"Diagnosing 6 Steps errors requires you to be close to the shooter. Model 2 will position himself so he can see the shooter's eye, trigger finger, and back. He's ready to avoid brass ejected from the rifle. He can do this by holding a hand fairly close to the ejection port to deflect brass away from his eyes. <**Model 2** moves into position.>

Now that the coach is ready, it's time to diagnose and correct any errors in the Six Steps to Firing the Shot. What is Step #1? <Sight Alignment> The coach can't tell whether the shooter has proper sight alignment, but he **can** see if the shooter has a good cheek weld, and cheek weld IS sight alignment. Simple observation can spot errors.

"The coach can now ask the shooter to find his NPOA and place it on target. The coach should look for signs of muscling the rifle. For example, does the shooter appear uncomfortable, straining, or forcing the rifle in position? Is the shooter's muzzle wobbling at his Respiratory Pause?"

"What are your questions so far about correcting errors?"

"Now it's time to see if the shooter is flinching, bucking, jerking, or blinking when shooting. To do this, the coach must observe his shooter's reaction to the rifle making a 'click' instead of the expected BANG!"

"The coach will tell his shooter to fire, when ready, using all Six Steps. When the shooter squeezes the trigger, watch closely for errors." <Instructor gestures towards **Model 1**, who exhibits a flinch>

"Did you see his shoulder move away from the rifle? That's an obvious flinch, and your shooter will not be that dramatic. If the rifle moves when he squeezes the trigger, he will miss. If you notice the rifle move at all when the shooter squeezes the trigger, call him on it.

After the shooter dry fires, give him feedback. Did the rifle move? Did he keep his eyes open? Remove the magazine from the rifle. If the coach saw any issues that need correction, give the shooter a dummy round. Give dummy rounds until the shooter corrects his errors. Once the errors are corrected, give the shooter one live round. As the coach, you do not want to give away the fact that you're giving them a live round. As the shooter, allow yourself to be fooled.

Once the shooter has fired the live round, remind him to mark his called shot on the witness target. Next, tell the shooter to shift his NPOA to the next square on the 25 Drill Target.

Coach, you may feed the shooter more dummy rounds to see if those issues you've corrected have come back. Repeat this process until all 5 live rounds are fired, one per square.

The Shoot Boss may ask ***Models*** to continue the demo with live ammo. If using live ammo, ensure shooters wear appropriate ear protection.

"Thank you **Model 1** and **Model 2**."

"What are your questions about the ball & dummy drill?" <Q&A session continues as needed>

"For this exercise, we're going to pair you off. Each coach will need five loose rounds, and a magazine for the shooter's rifle. If the rifle has a bolt-hold open mechanism, let an Instructor know, and we'll show you how to defeat it for this exercise.

"The line commands are different for this exercise; we'll begin and end the preparation period as usual. Then rather than the 'load' and 'fire' commands, the Line Boss will announce: 'The Line is Hot! The Line is Hot!' At this point, coaches will be in control of when shooters fire. Each shooter will have up to 15 minutes. Once a shooter fires five live rounds, make the rifle safe and switch roles. The shooter becomes the coach, and the coach the shooter. The Line Boss will announce the 15-minute mark, at which point switch roles if you haven't already done so."

"What are your questions?"

"I'll now turn you over to the Line Boss to be paired off."

<u>Anticipatory Errors Commonly Observed</u>

The four anticipatory errors are flinching, bucking, jerking, and blinking. Simply put, shooters exhibit these errors when they are anticipating the effects of their rifle discharging.

- Flinching. It might be in reaction to the noise, or the shooter isn't holding the rifle correctly and has taken a few knocks to the shoulder or face. The result is he has begun to flinch just before the round goes off, tensing up or moving the shoulder back to avoid the pain-inducing recoil. Some shooters involuntarily tense their whole body. Whichever form of flinch the shooter has, the result is the sights move off target.
- Bucking. Pushing the shoulder into the rifle just before it goes off in anticipation of the recoil. Bucking is closely related to the flinch, in that a shooter responds to pain or discomfort induced by recoil. Rather than pulling away from the rifle, a shooter forces his trigger shoulder against the rifle just as he squeezes the trigger, pushing the sights off target.
- Jerking. Engaging the trigger with excessive force or speed. Jerking the trigger moves the sights off target. There are multiple potential causes for jerking the trigger. To properly correct this error, a coach must find the root cause.
    - First, examine how the shooter is executing Steps 5 and 6 of the Six Steps. The "trigger buddy" coaching method can often help reinforce proper trigger control. In the "trigger buddy" method, a coach places his fingertip lightly atop the shooter's trigger finger. When the shooter breaks the shot, the coach monitors the movement. The coach traps the trigger and trigger finger back as if the shooter is

doing follow-through. The coach should provide immediate feedback on trigger technique.
    - Next, check if the rifle has stiff trigger pull. If so, ask the shooter to place the first joint of the finger on the trigger or his trigger finger lower on the trigger to gain more mechanical advantage.
    - Finally, consider whether the shooter has truly found and maintained NPOA. If the shooter's position is unstable, the sights will naturally move. A shooter will observe the movement of the sights and attempt to force the rifle to fire when the sights cross the target at the perfect moment, resulting in a significant jerk.
- Blinking. Blinking is typically a reaction to the report of the rifle. Loud noises near the face naturally induce the eyes to close as a self-defense mechanism. To properly execute step #6 "Follow Through," a shooter must keep his eyes open. Failure to do this makes 'calling the shot' impossible. Advise shooters who blink to double their hearing protection (ear plugs and muffs.)
- Note that many of these errors can also be induced by the report of a nearby rifle, especially if the rifle has a muzzle brake.

Executing the Ball & Dummy Drill

The Shoot Boss determines when to do B&D during the weekend. The Standard 25m event COF in the Instructor Manual has B&D on the morning of Day 2, as the shooters have the experience of employing all the instruction offered on Day 1. Others prefer to use this on Day 1, after the blocks of instruction on Prone Position, Six Steps, Natural Point of Aim, and Rifleman's Cadence have been taught.

There are several things to consider when deciding whom to pair with whom:

- Number of shooters. If there is an uneven number of shooters in attendance, partner an instructor or IIT with the stray shooter for the duration of B&D.
- Experience level. Pair shooters who have more experience shooting with those having less. Consider pairing shooters who have very little experience, or who have shown a great deal of difficulty with Instructors.
- Age. Pair very young shooters with someone more experienced.
- Room on the firing line. When determining who will be the first shooters, consider adequate spacing on the firing line.

All Instructors should be engaging the coach/shooter pairs very closely. Offer suggestions and ask leading questions. Make sure each shooter is getting quality coaching, and ensure each coach is learning *how* to be an effective coach.

Note: Instructors partnered with shooters for B&D should serve as both coach and shooter. Otherwise, the shooters will miss serving as coach and lose this important learning opportunity.

Frequently Asked Questions for Ball & Dummy

Q: Is my rifle safe to dry fire?

A: Most likely, yes. With rimfire rifles, you can check the breech face design. If there is a recess in the breech face in-line with the firing pin, dry firing will not damage the rifle. If not,

use a snap-cap when doing B&D. Shoot Bosses may order a pack of 12 .22 caliber snap-caps through the Shoot Box store at no cost. Designed by a fellow Appleseeder and plastics expert, these .22 caliber snap-caps can absorb many strikes without deforming. If there is concern that a rifle is not safe to dry fire on an empty chamber, issue a snap-cap for the coach to use in lieu of an empty chamber.

.22 caliber rifles that should not be dry fired without a snap cap:

- *Anschutz:* Recommends dry firing with a special firing pin (swapping firing pins not practical on our lines.)
- *Browning:* Do not dry fire older Browning .22 rifles without a snap cap.
- *CZ:* Do not dry fire the CZ 452 without a snap cap.
- *Marlin 60 and 795*: Do not dryfire either rifle without a snap cap.
- *Remington:* Recommends avoiding "extensive" dry firing the Remington 597.
- *Smith & Wesson:* S&W owner's manuals state dry firing can damage their rimfire rifles.
- *Winchester:* The Winchester 52 should not be fired without a snap cap.

Other rifles which are not well-suited to dry firing:

- *M1903 Springfield:* Many firing pins for the 1903 Springfield rifle have been broken due to dry fire. It's uncertain if the cause is poor metallurgy or age of the pin.
- *SKS:* The design of the firing pin and bolt of the SKS rifle will not allow it to be dry fired without damaging the bolt. It is a good idea to have a handful of 7.62x39 snap-caps on hand, just in case.

Q: Few people use a centerfire rifle at the 25m clinics. What's the point of B&D if nobody is flinching?

A: While B&D is probably the best way of fixing Flinching, Bucking, Jerking or Blinking, it does more. Teaching our shooters how to be effective line coaches directly prepares them to help pass on the tradition of Rifle Marksmanship. Further, some shooters will benefit from direct, one-to-one instruction for the drill. Whether this is someone who needs help getting past 210, or help getting out of the 50's & 60's, an Instructor coaching them can really help. Shoot Bosses should be on the lookout for shooters who do a particularly good job of line coaching, as they are already showing some of the necessary traits of becoming an IIT.

Q: Do I *have* to do Ball & Dummy?

A: B&D must be taught at every 2-day 25m and RBC event. Given all the benefits described above, why wouldn't you?

Chapter 25: KD Exercise at a 25m Event

Background

Shoot Bosses must include a Known Distance (KD) lesson in every two-day 25m Project Appleseed event. The combination of that lesson with a KD shooting component adds tremendously to the Appleseed experience for our shooters. The shooters who don't go to the KD range will hear excited comments from the KD shooters: "It works! What they tell us, works!" and look forward to KD when they reach the appropriate skill level.

Shoot Bosses should always seek opportunities to take shooters to distances beyond 25m. In fact, SBs should have strong justification to NOT take shooters beyond 25m. "We need to get in another AQT" is not a valid reason to deny our shooters KD experience.

Shoot Bosses can easily accomplish the KD component on a 100yd range.

We offer the KD lesson and shooting component because they support the goals to:

1. Dispel the myth that Appleseed is a .22LR shooting program for kids. Shooting at 25m with .22s is a stepping-stone to centerfire and full distance,
2. Reinforce the concepts of Inches-Minutes-Clicks,
3. Allow shooters to experience the effects of trajectory in their own shooting,
4. Prove that what works at 25m works out to 500 yards,
5. Instill confidence in shooters, resulting in higher AQT scores,
6. Provide a chance for Shoot Bosses to sell Rimfire KD and Known Distance events,
7. Build proficiency teaching these lessons, which is necessary for every Shoot Boss on the path to designated Shoot Boss.

Advice from Fred: *Take it to the bank! When you get in a KD shooting component, you are doing your job in the most effective way possible for your students!*

25m KD Shooting Options

There are three potential KD options. They are listed below from most to least common.

1. 100 yard Known Distance. This KD option will meet all the goals established above with the most efficient use of time. This is the most common of the KD options due to range availability and the equipment shooters commonly bring to a 25m Project Appleseed weekend.
2. 200/300 yard Known Distance. This option takes more time than 100yd KD shooting and does not provide significantly more experience supporting the goals listed above. Taking centerfire shooters out to 200 (low sight height rifles) and 300 (high sight height rifles) allows them to confirm their Battlesight Zero.

3. Known Distance AQT. This is rare and normally beyond the resources available to a Shoot Boss at a 25m event.

Logistics of running a 25m KD Exercise

First, identify shooters ready to go beyond 25 meters. Some SBs may choose to give this exercise only to shooters who have earned Rifleman scores. Others may choose to offer this exercise to shooters who have groups of 6-8 MOA or less, with a definable center. The Shoot Boss can simply note who they are or make an identifying mark on their target backers.

Second, move these shooters to the 100yd range. This may be as simple as moving their targets further downrange, or may require having them move rifle, ammo, and shooting mat to an adjacent bay.

Finally, take these shooters to the side and begin the exercise.

When taking 25m shooters out to known distances, briefly frame the lesson by reminding them of the trajectory information from the “Three Challenges of a Rifleman” lesson: bullets do not travel laser straight, but instead arc toward a target. This is a good time for Total Participant Involvement (TPI).

Shooters should begin with a 25m zero on their rifles. Tell scoped shooters to keep their magnification the same. Standard 25m AQTs are ideal.

Explain to shooters to keep the same sight picture as at 25m. Group sizes, in MOA, will remain the same as at 25m: "What you do at 25 is what you'll do at 100, or even 500." When they adjust their sights, they move "cone of fire,” not individual shots. The center of their group on target is the center of that cone. After adjustment, it should fall in the center of the target, just as at 25m.

Scoped shooters might find this the first time they have shot and were unable to see the holes in the target. Remind shooters to call every shot; it is especially valuable experience.

Once the exercise is finished, place shooters in prep to return their sight settings to their 25m values, and if necessary, pack up equipment and return to the 25m line. You might give the entire group a break so the new KD shooters can share their excitement with their peers.

100yd Known Distance

Have shooters post a 25m AQT at 100yd.

Shooters will be excited, so emphasize dry fire, NPOA, and other fundamentals. Shooters will fire five rounds. Have .22 rifle shooters engage the Stage 1 silhouette on the AQT, and centerfire shooters engage one of the Stage 2 silhouettes.

Before going down-range, use TPI and quiz the shooters where they think the Point of Impact (POI) is. Shooters with .22s will have POI below their point of aim; centerfire shooters POI will be above their point of aim. Go downrange to check groups, begin IMC, and mark/paste holes.

Once the shooters are back at the firing line and in prep, have them first write down their starting sight setting and then finish IMC. Have them write that value down as well.

Shooters might need an additional sighter group before moving forward with IMC.

Shooters then fire another 5-round group. If the Instructor led IMC properly, the shooters will understand the practical application of IMC with trajectory. Be prepared for a shooter to adjust sights the wrong way and need subsequent adjustments and an additional sighter group or two.

200/300 yard Known Distance

Taking 25m event shooters out to 200yd or 300yd should be done with discretion because of the additional time required.

Shooting at 200yd is useful for shooters using low-sight height centerfire rifles such as the M1 Garand or the M14. It allows shooters to zero at 25m and confirm far zero at 200yd and establish their Battlesight Zero. However, shooting at 200yd is of little or no value for .22 rifles or high-sight height rifles such as the AR15, at a 25m event.

Shooting at 300yd is useful for shooters using high-sight height rifles such as the AR15, allowing them to confirm their far zero at 300yd and establish their Battlesight Zero, but this is not one of our primary learning objectives at a 25m event.

Have shooters post appropriately sized paper targets at 200yd or 300yd.

Shooters will then fire five rounds.

Before going down-range, use TPI and quiz the shooters where they think their POI will be. Their 25m near zero should roughly be their 200yd or 300yd far zero. Go downrange to check groups, begin IMC, and mark/paste holes.

Once the shooters are back at the firing line and in prep, have them first write down their starting sight setting and then finish IMC. Have them write that value down as well.

Shooters will then fire another 5-round group to confirm their far zero. Briefly reinforce the utility of Battlesight Zero. The shooters have just zeroed at 25m and confirmed/refined at 200yd or 300yd.

By this point, shooters will understand the concepts of near and far zero and how they relate to Battlesight Zero. Be prepared for a shooter to adjust sights the wrong way and need subsequent adjustments and an additional sighter group or two.

Shooting a Known Distance AQT

Shooting a Known Distance AQT (100-400yd) is beyond the scope of the Shoot Boss Manual and can only be offered by a dSB/SI/MI. Please refer to the Known Distance Instructor Manual, hosted on the Appleseed Academy website.

Come-ups for Rimfire KD

See below for .22 long rifle come-up tables. Most Shoot Bosses will (wisely) choose to go from 25m directly to 100yd. Come-ups for that are highlighted in yellow.

100yd Rimfire KD Ammunition Come-Ups (in MOA)					
Distance	Eley 40g Target	Blazer 40g HV	Federal Automatch	CCI SV 40g	Average
25	0	0	0	0	0
25-50	0.4	0.6	0.3	0.4	0.4
50-75	3.1	1.0	1.6	3.1	2.2
75-100	3.9	2.8	3.1	4.3	3.5
Total	7.4	4.4	5.1	7.4	6.1

200yd Rimfire KD Ammunition Come-Ups (in MOA)					
Distance	Eley 40g Target	Blazer 40g HV	Federal Automatch	CCI SV 40g	Average
50	0	0	0	0	0
50-100	7	5	5.5	7	6
100-150	10.25	7	7.5	9	8.3
150-200	10.25	8	8.5	10	9
Total	26.7	19.6	21.4	26.1	23.4
* Data source: Strelok Pro					

Instructor Notes for 25m KD

Safety: Consider safety when conducting the KD shooting component. Our insurance requires a Red Hat in charge of any firing line when firearms are being handled. Instructors should be extra vigilant when shooters are packing equipment and moving to an adjacent bay/range. Understand host range rules and ensure we comply with them.

Being Prepared: An SB may need to tailor the KD shooting component "on the fly" to fit the situation. If you know KD is an option ahead of time prior planning, compiling the necessary equipment and having it all in place before the event will help the SB efficiently use the shooters' valuable time.

Focus on the Goal: Stay focused on the purpose for teaching KD at a 25m event and beat the time monkey. Avoid the temptation to turn your 25m event into a Rimfire KD. During the KD component, shooters are not gathering data at intermediate distances. They are learning trajectory, finding their far zero and confirming Battlesight Zero (if applicable).

Appropriate Distances: 100 yards is sufficient distance to help the shooters learn what is necessary in the KD component of a 25m event. Rimfire shooters will observe the 5-8 MOA drop between 25m and 100yd. Centerfire shooters will observe their shot groups hitting high

due to the upward trajectory of their rounds between 25m and 100yd. This is enough to drive the lesson home.

If distances beyond 100 yards are available, the Shoot Boss should judiciously balance how much additional benefit shooters will get from shooting beyond 100 yards vs. the time required. Also consider that .22 rifle iron sights, and many value-priced scopes, will not have sufficient elevation adjustment to bring rounds onto target at 200 yards.

Targets: To conduct the KD shooting exercise, shooting should be done on **paper targets** so shooters can experience the effects of trajectory and perform Inches-Minute-Clicks with precision. Attempting to perform IMC "at distance" on steel targets does not provide shooters the same experience.

A little ingenuity goes a long way in helping shooters get maximum gain from KD. The 25m AQT is ideal for 100 yds. If space on the target line is limited, it may work to have a .223 shooter and a .308 shooter fire on the same target, since the difference in hole sizes is easily discernible.

The bottom line is to be flexible and Improvise, Adapt and Overcome to provide the best learning experience possible.

Scheduling the KD Component: The KD shooting component is typically conducted Sunday afternoon, sometime after presenting the Three Challenges of a Rifleman. Shoot Bosses should try to integrate KD shooting so shooters can return to the 25m line and get in at least one more AQT. The shooters will benefit from the confidence boost KD shooting provides, resulting in improved AQT scores.

Chapter 26: Range Estimation (Alternate Presentation)

Background

1. This alternate presentation of Range Estimation is differs from the Academy video. With a different framing and structure, some instructors have found this approach useful. It teaches from the known to the unknown.
2. Don't joke or imply that math is hard. Some of your students will switch off as soon as you say that they must do hard math. The method we teach in this lesson uses basic arithmetic.
3. When drawing diagrams during the lesson, ensure that the width of the front sight post stays the same and the width of the target changes. This lets students visualize looking through the same sights at different targets at various distances.

Sample Presentation

Shooters, let's talk about Range Estimation. Range Estimation is the Second Challenge of a Rifleman. When engaging targets at distance, a Rifleman must know how far away a target is to make effective hits.

We have several ways to estimate range. Can anyone tell me the fastest and most accurate? <TPI>. Yes, a laser rangefinder. We have other methods to estimate range as well. These include pace counts, the football field method, map comparison, and dead reckoning.

However - a Rifleman has something with him that he can use to estimate range - the sights on his rifle. This method is simple and, with practice, can be fairly accurate. We estimate range by looking thru our sights and comparing our sights to a distant object of known size.

<Draw a LARGE diagram of a FSP and an equal-width man-sized target>

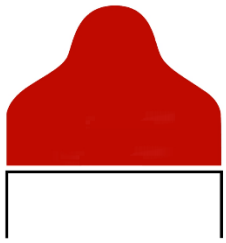

Figure 30 – FSP & Man-Sized Target @ 300y

The Army does something just like this. The Army designed the M16 rifle for simple range estimation. When you look thru the sights, if the width of the front sight appears to be the same as the width of a man-sized target in the distance, it fact tells a Rifleman that the target is about 300 yards away! Isn't that helpful?

But it works for other distances, too. <Update diagram so the target is 2x the size of the FSP>

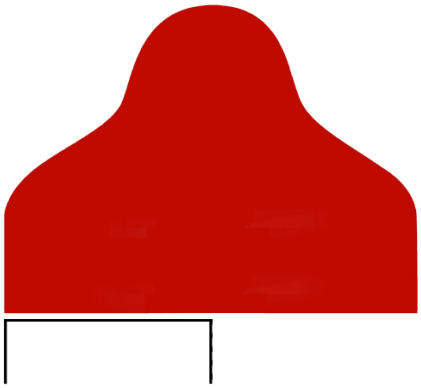

Figure 31 – FSP & Man-Sized Target @ 150y

When looking thru the same sights, if the target appears twice as big, would the target be closer or further away? Yes? Closer. What does your gut tell you about the distance to the target? <TPI> That's right, half the distance or 150 yards.

Let's try another one. <Update diagram so the target is 1/2 the size of the FSP>

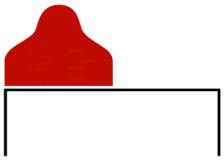

Figure 32 – FSP & Man-Sized Target @ 600y

When looking thru the sights, what if the target appeared HALF the size of when it was at 300 yards? How far away can you guess it to be? <TPI> That's right, 600 yards. Intuitively, we know this to be true.

You can do this with your rifle. Let's talk about how to do this with our own sights.

If we use the same method and apply very simple math, we can get pretty accurate results. To estimate range with our own rifle, we need to learn a bit about our sights. We need to know the width of a feature of our sights (like the tip of the front sight post) not in inches but in minutes of angle.

We can learn this fact at 25m using the drill target that we've been shooting all day. Does anyone remember from IMC what a minute of angle measures at 25? <TPI>

That's right, a quarter inch. Now think about the 1" black squares we've shooting. What do they measure in minutes of angle? <TPI. Show standard drill target>

That's right, 4 minutes of angle. If one quarter inch measures 1 MOA, then 1" (which is four quarter inches) measures 4 MOA.

We can take this drill target and widen the squares to represent 5 MOA and 6, 7, 8, and 9 MOA at 25. <Show a widened drill target>

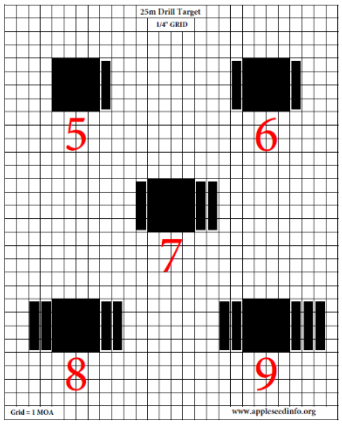

Figure 33 – 25m Drill Target, widened to measure a FSP

We can compare our front sight to this target and measure it in minutes of angle. Imagine we do that and our front sight measures 7 MOA wide. Now that we know the width of our front sight in minutes of angle, we're ready to estimate the distance to a target of known size.

We can use some very basic math to determine the distance to a target. The math problem is Object in Inches divided by Object in MOA equals Range in Hundreds of yards. <Write formula>

$$\frac{\text{O(inches)}}{\text{O(MOA)}} = R_{(100)}$$

Let's consider an example of how this would work.

Imagine we look through our sights and see a man-sized target downrange. Incidentally, a man-sized target is approximately 20 inches wide. To keep things simple, let's call it 21 inches. <Draw a diagram>

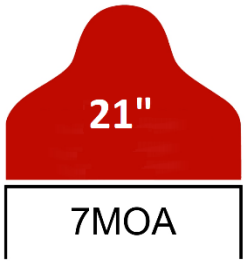

Figure 34 – FSP & Man-Sized Target, labeled for 300y.

Note that our front sight neatly covers the width of the target downrange.

Let's do the math. Our object in inches is 21 and our object in minutes of angle is seven. 21 divided by 7 is approximately what? <TPI>

$$\frac{21}{7} = R_{(100)} = 3_{(100)} = 300_{yards}$$

That's right, approximately 3! But 3 what? 3 hundreds of yards. Or 300 yards. Does this seem familiar? Yes, it's the same as the M16.

Let's look at it again. <Update diagram.>

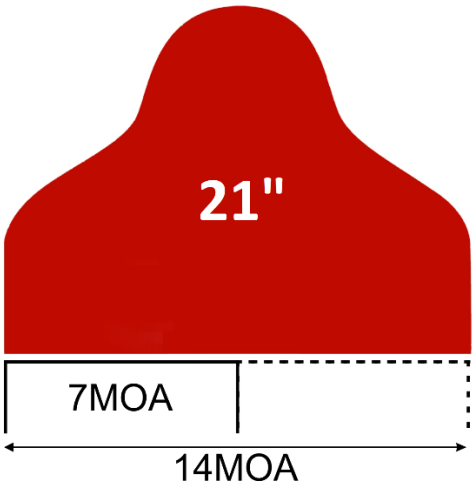

Figure 35 – FSP & Man-Sized Target, labeled for 150y.

If we look thru the sights and the target is twice as wide as the front sight post, what's the range? Well, the object in inches is still 21. The object in moa is what? <TPI>

Yes, 14. 7 moa for the front sight plus another 7.

21 divided by 14 comes out to about 1.5. 1.5 what? 1.5 hundreds of yards or 150 yards.

$$\frac{21}{14} = R_{(100)} = 1.5_{(100)} = 150_{yards}$$

Let's look at another example. <Update diagram.>

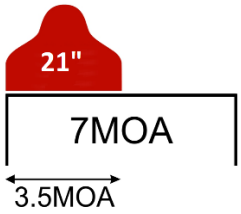

Figure 36 – FSP & Man-Sized Target, labeled for 600y.

If we look thru the sights and the target is half as wide as the front sight post, what's the range? Well, the object in inches is still 21 The object in moa is what? <TPI>

Yes, 3.5, half of 7 moa.

And 21 divided by 3.5 comes out to 6. 6 what? 6 hundreds of yards or 600 yards.

$$\frac{21}{3.5} = R_{(100)} = 6_{(100)} = 600_{yards}$$

You can do the same thing with your scope! When looking thru your scope, find a horizontal feature that's about 6-8 moa. You can look thru your scope and compare it to that same drill target and find something that's close. The method is the same.

Line up your scope feature on a target in the distance. <Draw diagram of creature>

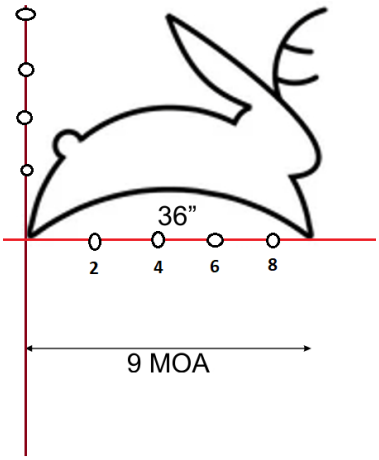

Figure 37 – Estimating distance to a creature using a scope.

Let's say you're estimating distance to a Smoky Mountain Jackalope. Those average about 36" wide. You look through your scope and measure the creature to be 9 MOA wide. Let's do the math: Object in inches? 36. Object in MOA? 9. The math is 36/9, which is 4. 4 what? 4

hundreds of yards or 400 yards!

$$\frac{36}{9} = R_{(100)} = 4_{(100)} = 400_{yards}$$

It's that easy.

For scope users, there is one additional piece of information that you need to know about your scope before range estimation. You need to know if your scope is a first or second focal plane scope. Most scopes on the market are second focal plane scopes. With a second focal plane scope, when you zoom in and out, the image changes size but the lines on the reticle stay the same.

With a first focal plan scope, when you zoom in and out, the lines on the reticle grow and shrink with the image.

Why does this matter? Well, for a second focal plane scope, whatever magnification you measure your reticle feature is the same magnification that you must do all your ranging. Otherwise, the math doesn't work. For a first focal plane scope, range estimation works on any magnification.

We've discussed how to measure your sights, perform basic range estimation, and the differences between first and second focal plane scopes. This is a general overview. At a KD or RKD, we'll cover the Second Challenge of a Rifleman in more detail and have practice exercises. It's a lot of fun!

What questions do you have about Range Estimation?

Revision History

The current version of this textbook is Version 2, dated July 21, 2023.

Revision #	Revision Date	Revision Description
1.0	June 14, 2021	Document Creation
1.1	July 4, 2021	Corrected minor typos
2.0	July 21, 2023	Added bonus chapters on Ball & Dummy and Running a 25m KD Exercise.