Tomahawk Rangemaster Course Outline and Standards - v3

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Contents

1. Purpose

This document provides safe and effective throwing guidelines and standards for the throwing and maintenance of tomahawks as a Scouts Canada Activity and a suggested framework for a Rangemaster Course that would utilize these guidelines and prepare members to act as Rangemasters.

Once this document is accepted it is intended that it will be used as a template for developing a knife throwing Rangemaster course that would allow Venturers and Rovers to throw knives.

2. References

- Scouts Canada Bylaws, Policies, and Procedures.
- Knife and Tomahawk Throwing Standing Operating Procedures, Indianhead Council, Boy Scouts of America (Draft)
- Knife and Tomahawk Throwing Policies, Cascade Pacific Council, Boy Scouts of America (April 19, 2010 revision)
- Shooting Sports Range Operations For Council/District Tomahawk Throwing, Pikes Peak Council, Boy Scouts of America (February 1, 2012 revision)
- Tomahawk Challenge Range Standards and Procedures Manual, DelMarVa Council, Boy Scouts of America (2009)
- Gränsfors Bruks Axe Book
- Tomahawks: Traditional to Tactical by David Grant. Paladin Press, 2007.
- Knife and Tomahawk Throwing by Harry K. McEvoy. Tuttle Publishing, 1988.

3. Rangemaster Course Outline

A. **General Explanation.** What follows is a suggested schedule for a Rangemaster course and is derived roughly from the Archery and Pelletry Rangemaster courses schedules used in Northern Lights Council. Regardless of the exact schedule it is the responsibility of the course instructor to ensure that participants are familiar with this entire document and—*above all else*—that they are able to demonstrate proper throwing technique, range layout, and range management.

B. **Suggested Course Outline.**

1. Introduction 9-9:20
    - Housekeeping
    - Brief Background
2. Policy Review 9:20-9:30
    - Criminal Code
    - County / Regional Regulations
    - City By-Laws
    - BP&P
    - NLC Policies
3. General Safety 9:30-10:30
    - Behaviour & Attitude
    - Equipment
        - Tomahawks
        - Targets
    - Transport
    - Clothing
4. Range Safety 10:30-12:00
    - Layout
    - Range Procedures
    - Throwing Mechanics
5. Practical Skill Demonstration 1:00 - 5:00
    - Range Set-up
    - Rangemaster Practice
    - Throwing Practice
    - Range Activities

4. Regulations

The following is a summary of known regulations that may be seen to have a bearing on the throwing / use of tomahawks:

A. **Canadian Criminal Code.** There are no specific restrictions or regulations pertaining to tomahawks in the Canadian Criminal Code. The exception is when the tomahawk ceases to be a tool and moves into the category of a weapon.

   Canadian Criminal Code Section 2 defines a weapon as follows:
   "weapon" means anything used, designed to be used or intended for use
   a. *in causing death or injury to any person, or*
   b. *for the purpose of threatening or intimidating any person and, without restricting the generality of the foregoing, includes a firearm;*

B. **Province / County / Regional Regulations.** No known regulations specifically pertaining to tomahawks or other edged weapons.

C. **Edmonton Bylaws.**
   a. **2202 - Parkland Bylaw.** This bylaw exists to "to regulate the conduct and activities of people on Parkland in order to promote the safe, enjoyable and reasonable use of such property and to protect and preserve natural ecosystems for the benefit of all citizens of the City." Section 13.a stand to prevent the throwing of tomahawks in city parks unless an exemption has been granted as per section 4. This bylaw may be found in its entirety HERE.
   b. **14614 - Public Places.** This bylaw exists to "to regulate the conduct and activities of people in public places to promote the safe, enjoyable, and reasonable use of such property for the benefit of all citizens of the City." Section 6 stands to prevent the throwing of tomahawks in public place. There seems to be no provision for exceptions. Note that in this bylaw public places are defined as "any property, whether publicly or privately owned, to which members of the public have access as of right or by express or implied invitation, whether on payment of any fee or not." This bylaw may be found in its entirety HERE.

D. **Bylaws, Policies & Procedures.** Silent on tomahawks directly. It is expected that the same general prescription for archery in the BP&P section devoted to lethal weapons will apply to tomahawks as well:
   a. Scouters may allow members to practice archery or to engage in archery matches only under competent supervision in designated or established areas for archery purposes. *BP&P, Section 13016*

E. **NLC Policy.** NLC currently has no published policies on Tomahawks but has decreed that Tomahawks may only be thrown on a range overseen by a certified Tomahawk Rangemaster and in accord with these guidelines.

F. **Axe Hole.** Axe Hole is an axe throwing range that has opened in Edmonton. It is not currently known if NLC has approached the range and reached an agreement about waivers. It should be noted that Axe Hole has a number of practices that work for them that will typically *not* be acceptable for tomahawk throwing. These include the throwing

of axes rather than tomahawks (see below for the distinction and the reasoning for not throwing axes) and the use of chain link fence to enclose the thrower (while this does make others “safe” from the thrower the fencing is hard on the tomahawks; we can do just as well with large cushions of space).

5. Responsibilities

Those responsible for the safe operation of the range are as follows:

A. **Rangemaster.** Overall responsibility for safe operation of the range. Rangemasters must have taken a Scouts Canada approved Tomahawk Rangemaster training course. Rangemasters must be at least 18 years of age. Specific responsibilities include, but are not limited to:
    a. Range setup, takedown, and all aspects of range operation.
    b. Operating the range only when there is no risk of injury.
    c. Informing all participants, observers, and Assistant Rangemasters of range safety procedures such as the various zones and the commands.
    d. Overseeing instruction on safe and effective throwing technique.
    e. Overseeing Assistant Rangemasters.
    f. Inspecting the tomahawks (See section 9), targets (See section 10), and range (See section 11) at the beginning and end of a throwing session as well as periodically throughout.
    g. Applying the principle of “Occasional Throwers” to all participants. This principle means that the Rangemaster will treat all throwers as if each session was their first one and not allow corners to be cut, such as holding tomahawks in the off hand while throwing one or allowing the carrying of tomahawks without sheaths.

B. **Assistant Rangemasters.** Takes direction from the Rangemaster to ensure range safety. Assistant Rangemasters must be at least 16 years of age, have completed the Tomahawk Rangemaster training, and must always be under the supervision of the Rangemaster.

C. **Coaches.** Takes direction from the Rangemaster and assists in helping people learn how to throw. Coaches must be at least 16 years of age and have completed the Tomahawk Rangemaster training. Coaching can only be given when the range is inactive, such as during an ALL CLEAR.

D. **Participants.** Whether throwing or spectating all participants are responsible for exhibiting safe behaviour, exercising safe judgement, and following the directions of the Rangemaster and assistant Rangemaster. Specific examples of safe behaviour include:
    a. Obeying commands.
    b. Remaining in the appropriate zones.
    c. Handling tomahawks with care and as demonstrated.
    d. Reporting unsafe behaviour to the Rangemaster.
    e. Not distracting those who are throwing.

E. **Observers.** While spectating at a tomahawk throwing event, all observers are responsible for exhibiting safe behaviour, exercising safe judgement, and following the directions of the Rangemaster and assistant Rangemaster. Specific examples of safe behaviour for observers includes:
    a. Obeying commands of the Rangemaster.
    b. Remaining in the appropriate zones.

c. Handling tomahawks only under the direct supervision of the Rangemaster at a the designated place for this and *not* throwing them (not even pretending).
d. Reporting unsafe behaviour to the Rangemaster.
e. Not distracting those who are throwing.

6. Eligibility to Throw

A. The Rangemaster has the final authority to disallow anyone from throwing on the grounds of safety.
B. The following registered & active members of Scouts Canada are the only ones eligible to throw tomahawks at a Scouting event:
    a. Youth (11+) in the Scout section or higher who have:
        i. participated in the range orientation and throwing training provided by the Rangemaster.
        ii. demonstrated safe handling of the tomahawks during the orientation and continuously thereafter.
    b. Adults (18+) who have:
        i. participated in the range orientation and throwing training provided by the Rangemaster.
        ii. demonstrated safe handling of the tomahawks during the orientation and continuously thereafter.

7. Operation of the Range

A. The throwing of tomahawks is only authorized at the designated throwing range approved by both the Rangemaster and the property holder and only when the Rangemaster is present and operating the range.
B. Only tomahawks inspected and authorized by the Rangemaster may be used for throwing. See section 9D for minimum requirements.
C. Anyone handling tomahawks must have closed-toe shoes, long pants, and no loose clothing.
D. All tomahawks will be thrown by the handle only.
E. Tomahawks must never be thrown sideways.
F. Only targets inspected and authorized by the Rangemaster according to section 10 may be used.
G. The Rangemaster will use the following commands to control the range or explicitly specify alternatives and these commands must be obeyed by everyone (Meanings of the commands are specified in section 8):
    a. TO THE LINE.
    b. READY.
    c. THROW.
    d. DOWN.
    e. ALL CLEAR.
H. No one is ever allowed on an active range. A range is active until the Rangemaster has declared the range clear. A clear range can only be declared when:
    a. All tomahawks are out of participant hands, or;
    b. There are no throwers at the ready line
I. When not throwing at the target, the tomahawk will be held head down at the throwing line until it is their turn to throw their tomahawk.
J. “Free-for-all throwing” / “Firing at will” is not permitted. The Rangemaster has a choice between:
    a. Allowing each line of throwers to throw one tomahawk at a time, waiting until each thrower on the line has thrown a tomahawk and the instruction of the Rangemaster before throwing another.
    b. Allowing each thrower, in turn, to throw each of their tomahawks before allowing the next thrower in the line to throw under the instruction of the Rangemaster.
K. Any violation of the rules, commands, or safe handling of the tomahawk will result in the immediate removal of the individual from the range.
L. The Rangemaster has the discretion to remove anyone at any time for any safety related reason from the range.
M. Safety is the most important factor in the operation of the range and anything that detracts from it is cause for immediate action to correct the concern.

8. Commands

- **TO THE LINE**. This command brings the throwers to the throwing line. At this point the range becomes live. All spectators and staff should be within a respective distance from throwers and their field of fire. Tomahawks are still “sheathed” / on the ground.
- **READY.** This gives the throwers permission to pick up a tomahawk and remove the sheath. If this is your first session with these throwers, just have them ready one tomahawk at a time. Eventually they can hold two in one hand while they throw a third. The throwers should just hold the tomahawks at their sides.
- **THROW.** This gives the throwers permission to throw the tomahawk into the target. Once you are confident that each thrower is capable, safe and your targets are far enough away that someone can remove tomahawks from the target; then you can let them throw at their own pace.
- **DOWN.** This is an immediate stop of the range and all tomahawks are to be sheathed, and put down, out of the hands of anyone on the range. Only after this is the emergency forcing the halt to be dealt with.
- **ALL CLEAR.** The Rangemaster will give this command to instruct the throwers that it is now safe to retrieve their tomahawk from down range. No one will step over the safety line or onto the range itself until given the ALL CLEAR command by the Rangemaster.

It should be noted that additional instructions may be given with these commands, as appropriate. For example, reminding throwers that they may throw only a certain number of tomahawks at a time and at their own pace or that they may not throw at the target if a tomahawk is already stuck in it might be appropriate to reminder throwers of each time a new line comes up. This said, such instructions are secondary to the FIVE clear commands highlighted above and should at no time bring confusion to these.

9. Tomahawks

A. **General background.** The name "tomahawk" now refers to any small axe made in a style reminiscent of a traditional small trade axe brought to North America by the Europeans and/or often associated with the Native Peoples of North America. Traditionally, tomahawks differed from other small axes by having the head slide onto a straight handle from the bottom and secure itself in the final position at the top of the handle by the widening of the handle. This is in contrast to the head going on the handle from the top and being secured by the use of a separate set of wedges as is done with most other axes and similar tools. Tomahawks may or may not have a spike or hammer at the poll. The relative small size of tomahawks makes it possible to throw them with one hand and there are organizations, such as the Alberta Black Powder Association and the Boy Scouts of America, that make this activity a part of their practice.

B. **Types of tomahawks.** What category a tomahawk falls into is at the discretion of the Rangemaster. The following are often considered tomahawks:
    a. "Traditional" tomahawks. These have a metal head (forged, cast, or folded) and a wooden handle. The head slides on from the base of the handle and is secured by the widening of the handle near the top.
    b. "Industrial" or "Tactical" tomahawks. These typically feature a single piece, all-metal design or a metal head affixed to a fiberglass, metal, or wood handle by means of bolts.
    c. "Fantasy" tomahawks. These are created to resemble weapons from fantasy stories or the like and are typically not well balanced for throwing and often not durable enough to stand up to the forces of (mis)throwing.
    d. Axes. These have the head slide onto the top of the handle at which point it is affixed by one or more wedges. This category includes axes of all sizes and bit types including, for the time being, competition throwing axes since they require a different throwing technique and can be more difficult to control given their weight (It is hoped that these can be included as an activity for Venturers when the knife throwing guidelines are implemented). The way the head affixes to any regular axe makes it prone to loosening when (mis)thrown and so we do not throw them.

C. **Tomahawks that may be thrown.** Only types *a* and *b* from *section 9B* with a single bit and and no poll spike may be thrown. Weight must be appropriate for the thrower—they must be able to throw with good form and if this is not possible then they must not be allowed to throw, regardless of the particular tomahawk.

D. **Condition.** It is the responsibility of range personnel to inspect tomahawk condition at the start and end of each session and periodically in between. All tomahawks must be in "good condition" this includes, but is not limited to, an inspection of the following:
    a. **Heads must wedge firmly to the handle.** Tapping the knob on the ground with a force similar to that used to knock on a door is a good test of this. If the head does not move then it is likely that the head is wedged firmly enough on the handle.

b. **Handles free of splinters or cracks.** Both a visual and a hands-on inspection should be made. If there is any chance of the handle breaking or the
c. **Bits must be sharp enough to easily stick in the target material.** If this is in question then it can be tested by striking the targets with the tomahawk.
d. **Bits must be free of chips or nicks.** Imperfections that might catch or scratch skin or clothing must be filed down/off.

E. **Recommendations.** Please see Section 13 for recommended tomahawks.
F. **Parts of Tomahawk.** Please refer to Diagram 1.
   a. **Head.** This is the business part of the tomahawk. It is typically metal.
      i. **Bit.** Sometimes called the edge, this is the sharp side that would be used for cutting things with a hacking/chopping motion. Historically steel was very expensive so only the very edge or bit would be steel and welded onto the softer iron head. Some tomahawks and axes have two bits. When such axes are working tools rather than being thrown or being for show the two bits are often sharpened differently so that more work can be done with one tool. It is the bit that must be fully covered by a sheath.
      ii. **Toe of Bit.** This is the top edge or point of the tomahawk bit. Some tomahawks have upswept toes making it easier for them to stick into the target if the tomahawk strikes the target with the handle close to parallel to the ground.
      iii. **Heel of Bit.** This is the bottom edge or point of the tomahawk bit. Like the toe it can also be swept long, allowing for a greater range of success when throwing.
      iv. **Side or Cheek.** This is the space between the bit and the handle or haft. Some tomahawks will have shapes cut out here for decoration. A heart, often called a “bleeding heart”, is the most common.
      v. **Poll or Butt.** This is the end of the tomahawk head opposite the bit. Sometimes a spike or hammer will form the poll. It is very important to remember that an axe of any kind should only be used for hammering if it has a poll specifically made for hammering (a “hammer poll” will look a little like a hammer head). If a regular poll is used for hammering then the softer steel in the poll and around the eye will deform over time, leading to a loose head and creating a serious safety hazard.
      vi. **Eye.** This is the top of the head where the handle meet the poll and cheek. On a traditional tomahawk the handle is wider at the top and not flush with the top of the head as a standard axe would be and so it might be said that a tomahawk has a “swollen eye”.
   b. **Handle or Haft.** This is the part of the tomahawk that is held in the hand during throwing or chopping. A traditional tomahawk has a straight handle that widens slightly near the top to prevent the head, which slides on from the bottom, from sliding off. Tomahawks were historically made this way so that the handles could easily be replaced in the field with only a minimum of tools, possibly only a crooked knife.

i. **End, Swell, Knob, or Bottom.** “Swell” and “knob” are names given to the bottom of axe handles. It might seem odd to use these terms with a tomahawk handle given that this end is often the narrowest but sometimes the terms are used just the same.

ii. **Back.** This is the side of the handle on the poll side and away from the bit.

iii. **Belly or Throat.** On a standard axe handle the belly and the throat are different. The belly is closer to the head and curves towards the bit. The throat is closer to the end of the handle and curves towards the poll. Given the straight handle on a standard tomahawk this distinction is mostly moot and the two terms may be used interchangeably. Note that many tomahawk handles will have a teardrop shape when looked at down the eye or end. The point of the drop will be towards the bit and thus fall along the belly of the handle. This can be used by the thrower to ensure that the tomahawk is being thrown properly with the bit directly in line with the target.

Diagram 1: Parts of a Tomahawk

10. Targets

A. **General.** The selection of an appropriate target is essential for successful tomahawk throwing. The ideal material to throw at is wood, although alternative materials such as styrofoam or straw bales may be judged as suitable by Rangemaster. If wood is used throwers will find more success if the grain is vertical (e.g. 2x4s stacked lengthwise) or aligned with the direction of tomahawk travel (e.g. when the end of a stump or "cookie" faces the thrower).

B. **Minimum requirements.**
   a. **Nothing living.**
   b. **Stability.** The most important quality to consider in a target is its ability to remain standing when hit by a tomahawk or while a participant is pulling on a tomahawk to remove it. A reasonable test for this is to have the Rangemasters push the target at the same height as the main target area with as much force as would be required to move a 20 pound box sitting on a table.
   c. **Target affixed firmly to stand.** It must not be the case that the target can fall from the stand either during throwing or while the tomahawks are being retrieved, even if improperly. The easiest way to ensure this is by affixing it to the stand from behind with sturdy bolts or screws.
   d. **Stickable target area.** It must be possible for a tomahawk to actually stick in the target area when thrown properly. A reasonable test for this is to stand in front of the target and strike it with a tomahawk using the same force that would be used to gently sink an axe into a chopping block, which is to say, very little force should be required.
   e. **Nothing that can hurt the tomahawks.** Tomahawks will inevitably miss the target area and strike the frame. The frame should be resilient enough to stand up to this repeated abuse but forgiving enough that it will not unduly damage the tomahawks. Targets and stands are often made of pieces of wood attached together with metal fasteners. Such fasteners must be countersunk whenever it might be the case that a tomahawk might strike them when thrown. Metal stands should be wrapped in a soft yet durable protective layer such as old carpet. A reasonable test is for the Rangemaster to consider whether or not they believe that striking any exposed part of the target with any part of an axe that would be used in a regular camping situation would not unduly damage that axe. Do not throw at the ground.

C. **Sample targets.** Please see the Section 14 for sample targets and construction instructions.

11. Range

A. **General.** The layout of the range is a core component of safe tomahawk throwing. Ideally you have a large open area of at least 30m x 50m that is covered in short grass. The openness will give the Rangemaster the ability to see across the entire range and this spacing will ensure that any misses or bounces of the tomahawk will come to rest on the ground before putting anyone in danger. The distances reported here have been tested for with both a Scout-aged youth and an Adult with each throwing both properly and improperly (but not directly dangerously, such as throwing purposefully at someone else on or near the range). It must be remembered that tomahawks are not arrows, pellets, or bullets, and are throw without the assistance of a bow or gun. Gravity factors heavily into the behaviour of a tomahawk while thrown and so the need for things like backstops and "danger / out of bounds" areas behind the range is not required.

B. **Marking the Range.** Hammer stakes in the ground and run bright string, caution tape or a length of triangle flags around the stakes. Whatever you use to mark the borders, it needs to be visible. The throwing line can be some washable spray paint on the ground or even a thin branch. Don't use anything that the throwers can trip over as they walk to the targets.

C. **Single Rotation Throws.** The setup of the ranges described here are for *single rotation throws*, meaning that as a well thrown tomahawk moves toward the target it will make one full rotation before the bit strikes the target. At the distance required for a single rotation, less effort is required to make the tomahawk stick in the target than when splitting a log with an axe. This is the safest type of throw and it is likely to be appropriate for 99% of users. Note that different throwers will have their tomahawks spin at different rates and so the distance between the throwing line and the targets may require adjustment to accommodate throwers of different sizes. Roughly, taller people may need the throwing line moved back a bit, and shorter people may need the line moved closer to the target.

D. **Multiple Rotation Throws.** Multiple rotation throws require more power and thus more control to be thrown safely and so they are only to be allowed by the Rangemaster if appropriate attitudes and control (e.g. six consecutive sticks in a target when throwing with proper form) are shown. To maintain the safety of the range with multiple rotations additional space needs to be added to the range in the order of 10m to the length and width of the overall range for each additional rotation. No range should operate with more that three rotations.

E. **Throwing Box.** The throwing box is a rectangle about 1.5 meters deep by the length of the width of the range that the throwers must stay within while the range is active. There are two throwing styles that may be used on a range: stationary and step through (See Section 12 for further explanation). Both of these may be used simultaneously and safely on the range. Regardless of the throwing style used, the leading edge of the throwing line (i.e. the edge closest to the targets) must never be crossed when the range is active. Even though both styles may see a thrower shifting the point where they release their tomahawk by about 30cm forward or backward. If a thrower would need to

cross this line to make successful throws then either the target or the line needs to be moved at a time when the range is not active.

F. **Indoor Ranges.** Only specially designed facilities are allowed and each requires Council approval in advance. On the chance that you have the opportunity to run an indoor or enclosed range, here are some considerations that will be made during Council's assessment:
    a. **Range size**. Indoors, you still cannot have anyone down range or behind the throwers. Thus it is very important to have the space on the sides.
    b. **Ceiling height**. Most throwing should not arc too high, but mistakes will happen and there is the bounce effect to consider.
    c. **Wall Protection.** You may have to look into protecting light fixtures or wall surfaces.
    d. **Floor Protection.** Many floors need to be protected, both from being damaged from the tomahawks and to protect the tomahawk as it strikes the floor.

G. **Backstops.** The ideal backstop is no backstop at all since they interfere with the sightlines of the Rangemaster, stand to damage the tomahawks, are extra equipment to transport, and do not offer additional protection as long as spacing requirements have been taken into account. This said, it is recognized that there may be times when limited space will be available and a backstop may be used to reduce the space requirement behind the target. Exactly how much the length of the range may be reduced will depend primarily on how close the target is to the obstacle being used as a backstop and dimensions of the obstacle. How much the distance at the back of the range may be reduced is at the discretion of the Rangemaster. The backstop should be a metre or two wider than the targets when they are laid out. Not too hard with a single thrower target, but the more targets, the bigger and more involved it will be to build this. Take that into consideration when determining where your range is going to be.

H. **Basic Range Layout.** This description is for a range that is operating with a single thrower/target. Instructions on how to modify this for multiple throwers follows.
    a. **Dimensions.** Please refer to *Diagram 2: Basic Range Setup - Single Thrower* for reference when reviewing these descriptions.
        i. **Overall area.** The overall area of the range should be *at least* 30m x 50m. While the overall area of the range is a rectangle the active / danger area of the range are the red trapezoids that extend from each of the corners to a point about 5m in from where the throwing line meets the outer edge of the overall area.
        ii. **Throwing Box.** The side of the throwing box closest the targets should be roughly 30m from the far end of the range in the direction in which tomahawks are being thrown.
        iii. **Thrower.** The thrower should be in the center of the throwing line.
        iv. **Behind the Thrower.** Given how tomahawks are thrown the space behind the thrower must be kept clear in case a tomahawk might slip from a thrower's hand and go out behind them. A barrier immediately behind the thrower might also be used to reduce the area required behind the

thrower. Such a barrier would need to be sturdy enough to not fall or break when struck by a tomahawk thrown at full strength and wide enough and tall enough to justify the amount of space taken away from this area.

v. **Target.** The target should be roughly 6m from the throwing line, in the direction in which tomahawks are being thrown.

vi. **Backstop.** If a backstop is used it should be roughly 4m behind the target. A backstop must be sturdy enough to not fall or break when struck by a tomahawk thrown at full strength.

vii. **Rangemaster.** The Rangemaster should be at least 10m from the thrower and just ahead of the throwing line by approximately 1m and should remain in a space approximately 1m square. This positioning will allow them to see the throwers, including their form so that problems can be anticipated, the line of future throwers, and the entire range (except for possible blind spots behind the targets and/or backstop).

viii. **Tomahawk Storage.** Tomahawks that are not in use are to be stored beside either a the Rangemaster or an Assistant Rangemaster, out of reach of participants, and in such a way that they do not present a tripping hazard, such as on a table. Tomahawks should be kept in this area during the setup and takedown of the range.

ix. **Assistant Rangemasters.** Assistants Rangemasters may stand across the range, opposite the Rangemaster or outside of the range area entirely. It is highly recommended that at least one Assistant Rangemaster is tasked with supervising the waiting participants. Like the Rangemaster, Assistant Rangemasters are to remain in a 1m square area while the range is active.

x. **Participants.** Participants should stand across the range opposite the Rangemaster and in a single-file line, parallel with the throwing line. A box should be marked on the ground to indicate the waiting area.

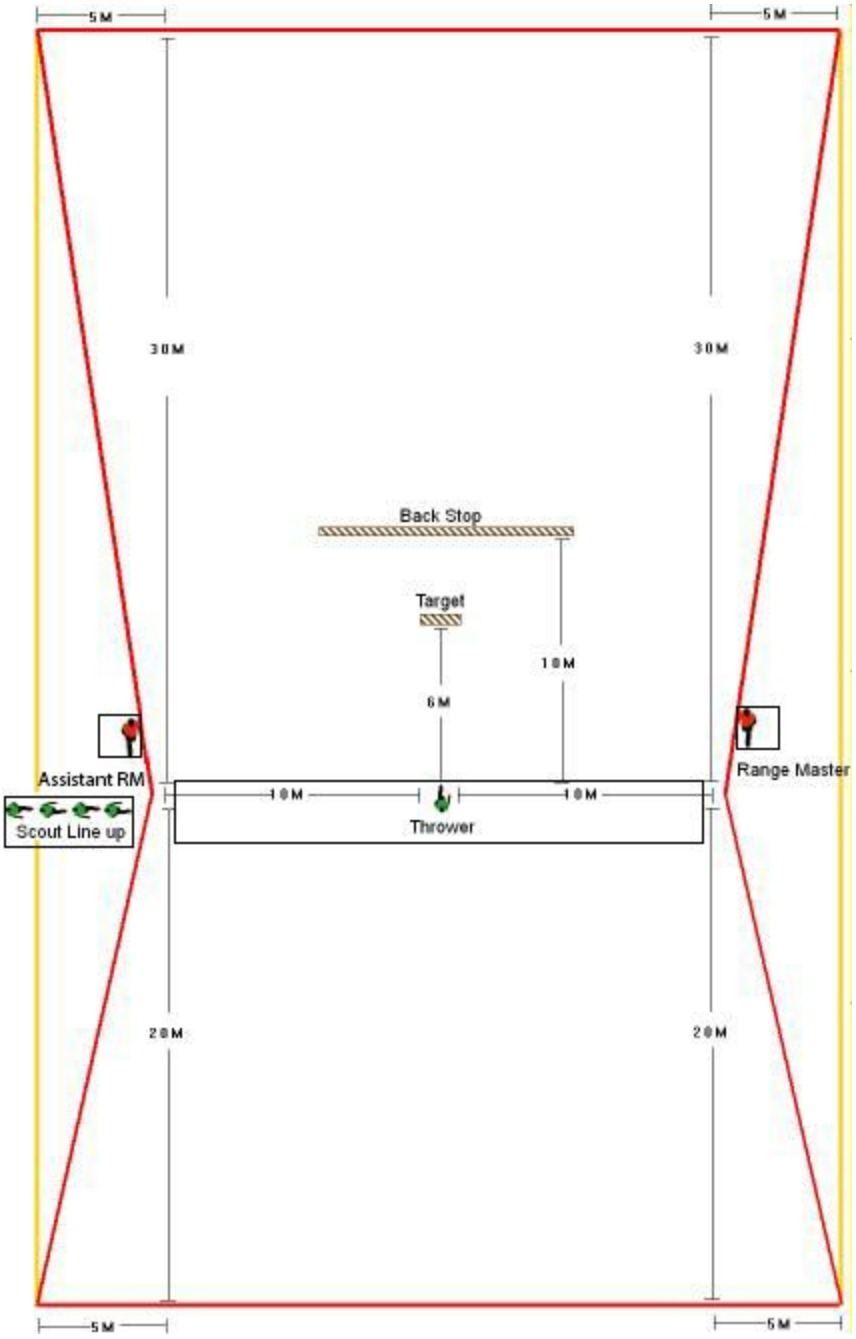

Diagram 2: Basic Range Setup - Single Thrower

l. **Advanced Range Layout.** This description is for a range that is operating with multiple throwers/targets.

a. **Dimensions.** Please refer to *Diagram 3: Advanced Range Setup - Multiple Throwers* for reference when reviewing these descriptions. With the following the exceptions, the layout of a range to accommodate multiple throwers requires the same considerations as for a single thrower.

i. **Overall area.** The overall width of the range needs to expand to accommodate additional throwers. This is to be done by adding at least 5m between each participant and target and extending the overall width of the range accordingly. *Diagram 3* shows two throwers and so the overall width has expanded from 30m to 35m. Three throwers would set the total minimum width of the range to 40m.

ii. **Rangemaster.** The Rangemaster may oversee up to three throwers without the need of an Assistant Rangemaster. With four to six throwers at least one Assistant Rangemaster is required.

iii. **Maximum Range Capacity.** No range may be operated with more than six throwers since it extends the range too far and it becomes difficult to observe the throwers. If more than six throwers are needed at a time than a separate range should be employed.

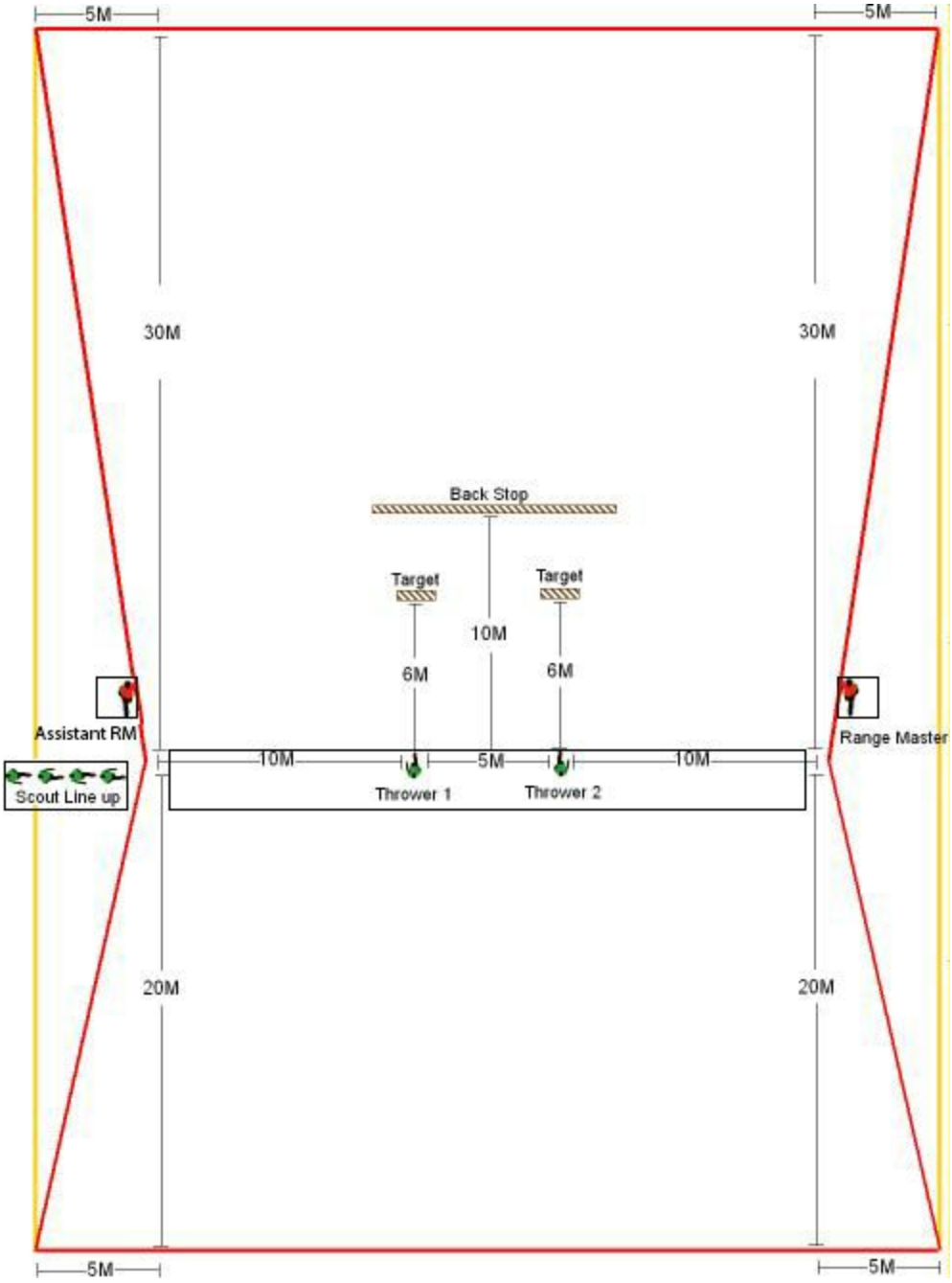

Diagram 3: Advanced Range Setup - Multiple Throwers

12. Tomahawk Throwing and Handling Instructions

A. **Transport.**
   a. **Sheathing.** The only time that is acceptable to remove the sheath of a tomahawk is immediately prior to throwing and for instructional purposes. A piece of folded cardboard reinforced with tape can make an acceptable sheath that can provide reasonable protection for both the tomahawks and the people around them while their are being handled or in transport..
   b. **To and from the range.** Tomahawks should be transported to and from the range in a case or bag that will protect both those around from the tomahawks and the tomahawks from the surrounding environment. It is recommended that the tomahawks be stacked in a small duffle-style bag with the handles along the outside edge and the bits facing towards the centre. Head direction should be alternated with each tomahawk to distribute the weight evenly and the bits always pointing in. Tomahawks must be sheathed during transport.
   c. **On the range.** When carrying the tomahawks on the range they should be held with the hand choked up close to the head, the handle parallel to the ground, and the bit facing away from the body. Depending on hand size more than one tomahawk may be carried in one hand this way. Tomahawks must be sheathed as they are retrieved after throwing.

B. **Throwing.** Remember that throwing is different from shooting and so there are different variables to be addressed, most notably changes in the throwers. Regardless, the rules regarding the throwing line (Section 10E) must always be adhered to.
   a. **Aiming.** Aiming a tomahawk is done via the placement of the feet. Assuming that both feet are pointed directly forward then a line drawn roughly in the direction that the toes of the foot on the same side of the thrower's hand is pointing will indicate the path of the tomahawk. So, if a thrower was right handed then the toes of the right foot would be pointing in the direction the tomahawk will travel.
   b. Stationary Throw.
      i. **Stance.** The thrower should stand with the foot opposite their throwing arm slightly ahead of their other foot, about the distance of a comfortable walking step. This position is held for the entire throw. Having the foot opposite the throwing arm forward at a comfortable step balances the body against the movement of the throwing arm, keeping the hips parallel to the throwing line and the aim accurate.
      ii. **Grip.** The tomahawk should be held firmly at the end of the haft with the thumb on the back of the haft. The bit should aligned such that it is moving the arm straight forward or backward would keep the face of the tomahawk parallel with imaginary aiming line extending from toe to target.
      iii. **Cocking the Arm.** The arm is brought straight upwards from the shoulder with the elbow bent at approximately 90 degrees until the upper arm is just higher than it would be if it was parallel to the ground. The

tomahawk is now behind the thrower with the bit pointing roughly up and backwards at a 45 degree angle from the thrower's body. Throughout this movement and the throw the elbow must always be close to the body. If it is allowed to creep away—sometimes this is called a "chicken wing"—then the path of the tomahawk changes drastically, making it possible for the thrower to hit themselves in the head on the throw. The danger of this possibility is greatest in new throwers, who do not yet know the right form, and throwers who are tired. Rangemasters must always be vigilant against this and prevent those without either the requisite care or strength to throw.

iv. **The Throw.** The arm is brought forward, principally by the shoulder, and the elbow extended. The tomahawk is released when the arm is almost straight and the tomahawk is able to proceed toward the target in a shallow downward arc. The rotation of the tomahawk and its power comes from the shoulder and the elbow—*not from the wrist*. This is really just the motion that would be used to chop the target if it was immediately in front of the thrower.

v. **Follow Through.** In a natural movement after release, the throwing arm returns to the thrower's side.

c. **Step-Through Throw.** The step-through throw is almost identical to the stationary throw except the foot on the same side of the thrower's dominant hand starts forward with the opposite foot a short, comfortable step behind. The thrower steps forward with their opposite leg as they cock their arm and complete the single, comfortable step on the follow through. While this is a slightly more complicated movement many throwers report that it feels more natural and thus they are better able to make successful throws.

C. **Reading a Throw.** Tomahawks move slower than the projectiles of most other range activities, allowing for their path to be read during flight and future throwing adjustments to be made accordingly. The various ways they might strike the target can also be read to the same effect. Here are some common indications that some changes to the throw are required and the remedies for each.

a. **End of the haft strikes the target.** This typically means that the tomahawk has not completed its rotation on the way to the target. The thrower should move back about a half-step (approximately 30 cm).

b. **Eye strikes the target.** This typically means that the tomahawk has completed more than its allotted rotation on the way to the target. The thrower should move forward about a half-step (approximately 30 cm).

c. **Inconsistent rotation.** Each throw of the tomahawk is different from the previous, some fast, some slow. Often this is an indication that the thrower is trying to adjust the rotation by how much they involve their wrist in the throw. While rotations can be controlled by the wrist this is an advanced technique and one that will frustrate new throwers. Have them focus on moving their shoulder and elbow *consistently*.

d. **Tomahawk spins rapidly.** The rotation of a tomahawk thrown by the method outlined here should be fairly slow, about one rotation every 5-6m. Anything spinning faster than this is likely being thrown with too much force and or a wrist-based throw.
e. **Face of tomahawk visible.** If the tomahawk is turned in the target such that one side of the face is visible, as if the thrower were trying more to slap the target with the side of the tomahawk rather than chop it with the bit or had chopped at the face of the target at an angle, then this usually indicates the handle was rotated in the hand for the throw. Keeping the thumb on the back of the haft and showing the thrower how the belly edge of the haft indicates the direction of the bit will usually remedy this. In some cases this may indicate that the thrower is letting their elbow drift away from their body during the throw.
f. **Handle at an angle.** A clean throw should result in the handle spinning along the aiming line so that if the tomahawk were to stick in the target it would point down, like the hour hand at 6pm. If the handle is pointing in another direction then it is being released by the thrower at that angle. Correcting this could simply be a matter of ensuring that the wrist is properly aligned throughout the throw. More significantly, this may indicate that the thrower is letting their elbow drift away from their body during the throw.

D. **Marking One's Place.** Until a thrower is proficient at judging the appropriate distance from the target a small item such as a token, pebble, or card should be used by each thrower to mark the starting position of their foot so that they can appropriately adjust their position between throws and between turns. These markers should be placed to the side of the thrower and not directly in front so they do not present a hazard for slipping or tripping.
E. **Removal of tomahawks from targets.** Tomahawks should be removed from the target by placing one hand on the target, grabbing the end of the tomahawk handle with the other hand, and levering the tomahawk out of the target in parallel to the bit. Not putting your hand on the target can create a hazard with certain targets (they could shift and fall) and not levering the tomahawk properly can damage the target and the tomahawk.
F. **Maintenance.**
    a. **Sharpening.** Tomahawks should be kept roughly as sharp as a splitting axe and should be free from burrs. Chips are fine so long as they do not produce a rough edge that might catch on something or lead to more significant damage to the tomahawk through normal use. Most burrs and chips can be cleaned up by placing the eye of the tomahawk in a vice with the bit exposed and then applying a file to the bit.
    b. **Cleaning.** Tomahawks should be wiped clean and dry before storing and should be clean before throwing. Wipe from the eye to the bit to prevent cutting oneself or the cloth being used.
    c. **Handles.** Occasionally tomahawk handles will become chipped or split. If this is not too severe such areas may be sanded to take off the rough edge and the handle still used as long as it will not catch a thrower's hand or lead to poor

throws. If there is any question the handles should be replaced. Some handles are unfinished and should be oiled from time to time to preserve them.

13. Tomahawk Recommendations

A. **Reminder.** Beyond the prohibition against fantasy tomahawks, regular axes / hatchets, double bit, and poll spiked tomahawks (Section 9C) what tomahawks may be thrown is at the discretion of the Rangemaster.

B. **Preference of Heads.** There are different methods of producing a tomahawk head and they typically have significant consequences for the use and performance of the tomahawk. These general methods, in order of preference from most prefered to least preferred, is as follows:

   a. **Forged.** Forged materials are produced individually by blacksmiths and typically receive a very high level of care and attention. The hammering provided by the blacksmith on the red hot ingot and the attention to differential cooling and tempering produces a tomahawk head of superior quality that is able to maintain its edge and resist damage. Unfortunately such tomahawks are typically significantly more expensive than all the other alternatives. The tomahawks made by Gränsfors Bruks are forged.

   b. **Drop Forged.** Drop forging is mass production method of achieving results similar to hand forging. It is done by taking a red hot iron ingot, placing it in a mold, and then having a power hammer force the ingot into the mold. While the stresses on the metal may not be as masterfully distributed as they would by a master smith they are extremely serviceable and each tomahawk is basically identical to the next. They are also much more affordable than forged tomahawks. The tomahawks made by Cold Steel / American Tomahawk Company are drop forged.

   c. **Stamped and Welded.** A tomahawk template shaped like two tomahawk heads lying poll to poll is stamped out of a sheet of steel, bent around a template handle at the middle to form the eye, and then has both faces hammered under heat until they are welded together. These tomahawks are cheaper to produce than drop forged tomahawks because they require less equipment and less skill. These tomahawks are typically decent throwers but do not perform well if used in place of an axe. If used the Rangemaster should be careful to inspect the weld to make sure that it is holding up to repeated throwing. Many tomahawks bought from overseas sources are produced in this way.

   d. **Cast.** A mold is made in the shape of a tomahawk head and liquid metal poured in. Once cool the head may be ground to produce the edge. These are the worst choice for a tomahawk since the weakness of the metal forces the angle of the bit to be too steep, making it hard for the bit to bite into the wood and stick.

C. **Fixing Pins.** Some tomahawks with wooden handles will have pins in them that can be screwed into the handle. The intent with this is to lock the head on the handle. The typical consequence though is that after repeated missed throws the head shifts anyway

and the pin starts to gouge the handle. Rangemasters should consider removing these pins in advance of throwing as long as the head is able to fit snug on the haft.

D. **Hardwood Haft.** When wood handles are used they should be made of a hardwood with a straight grain that is free from knots. Hickory is popular but other hardwoods may be used. Beware of handles that have the grain either painted or burned into them as this often indicates a handle with a poor grain.
E. **Colour.** It is recommended that tomahawks have their handles painted a bright colour to make them easier to find them.
F. **Norse Hawk.** The style of tomahawk that most participants will find success with throwing is often called a “viking” or “norse” tomahawk and features an upturned toe and downturned bit (The Cold Steel Norse Hawk, or “CS-90N” by some vendors, is ideal. See *Diagram 1*). This shape allows for a greater range of contact with the target that will result in the tomahawk sticking.

14. Sample Targets and Instructions

A. **Basic Tripod Target.**

a. **General Description.** This target is relatively easy and cheap to make, consisting of a few 2x4s and a thin “cookie” or “round” from a tree. The 2x4s are used to form an A-frame or tripod and are used as a narrow shelf to hold the round. This target is best if you are a casual but experienced throwers. It’s quick to setup, doesn’t require a lot of effort or preparation, and throws can be adjusted to the stand. It might be suitable for Rovers, it is not suitable for Scouts.

Diagram 4: Basic A-Frame

b. **Construction Details.** The center piece or target is a cross cut piece of lumber about 2 feet in diameter. 8 3’’ wood screws were used to attach it all together. To prevent the round from coming loose and falling on a thrower while they are retrieving their tomahawks it is attached back brace which is attached directly to the frame.

c. **Advantages:**

i. **Cheap.** This target cost about $15.00 for the 2x4s and screws. The round was found.

ii. **Easy to make and fast.** About 5 minutes was spent putting this together.

iii. **Easy to transport.** It collapses down to just a few 2x4 pieces that should fit in most vehicles.

d. Disadvantages:

i. **Stability.** There is potential that some throws will knock the whole stand over. Pulling a tomahawk out of the target may see the construction shift and fall if the thrower is aggressive in pulling or otherwise not careful.

The legs of the target are relatively thin as well and repeated missed throws may quickly destroy them.

ii. **Thin target.** Ideally the round should be at least twice the size but this will require additional bracing to support the weight. A round this thin is in danger of splitting.

iii. **Finding the round.** Trying to find an appropriate piece of wood to use as a target may be difficult. It's not something you can pick up at the local hardware shop.

B. **Deluxe Tripod Target.**

a. **General Description.** This target is a significantly more robust form of the basic tripod, consisting of a more substantial lumber and a much larger "cookie" or "round" from a tree. 2x4s are used create arms to hold the round. It requires additional effort to set up but the payoff is additional stability. This target is suitable for all throwers as long as someone is able to handle the weight of the round. See Diagram 5 and Diagram 6.

Diagram 5: Deluxe Target, Front View

Diagram 6: Deluxe Target, Side View

b. **Construction Details.** The front legs are 5’ fence posts and the back leg is a 8’ 2x4. The arms and 2x4s about 2’ long. The apex of the tripod is attached together with a piece of threaded rod that has been cut to allow enough play so that the front legs can be spread. A nut and a washer are at each end to stop the rod from running out. The arms are attached with with 3’ lag bolts to the front legs. These bolts have been offset for strength and the arms and tripod legs labelled to ensure a proper fit when setting up. All metal attachments have been countersunk to protect both the target and the tomahawks from errant throws (See Diagram 7). Lastly, a back brace has been added that fixes the round to the tripod with a 12’’ lag bolt to reduce the danger of it falling during retrieval of the tomahawks (See Diagram 8).

Diagram 7: Deluxe Target, Countersinking & Labels

Diagram 8: Deluxe Target, back brace

c. **Advantages:**
   i. **Stability.** This target is unlikely to tip over without directed effort.
   ii. **Robustness.** This target can handle many missed throws and other abuses.

d. **Disadvantages:**
   i. **Transport.** This target is heavy and long making it hard to find a vehicle that will fit it or to carry it to the range.
   ii. **Sourcing Materials.** This version was made with scraps from completed projects and rounds found after a tree surgeon took down a tree. Buying the lumber and materials would cost $50+ and finding such large rounds is not easy.

C. **Slat Target.**
   a. **General Description.** This target foregoes the tripod for more vertical stand and the round for a set of 2x4s stacked face to face and mounted with the grain vertical (See Diagram 9). It takes more effort to assemble than the basic tripod but it provides more stability. This target should be suitable for all throwers.

Diagram 9: Slat Target Views

   b. **Construction Details.** This target requires more materials and more work, but is stronger and has better reuse value. It cost about $50.00 in materials and was built from two 4x4 posts, five 2x4s, and some spare plywood. Don't use less than ½ inch thick plywood as that is what is going to hold your target and needs the strength. The target was build by cutting two of the 2x4s into 18" lengths. 10 of these were attached together with wood glue and clamped (These could be further strengthened by using 2x6s or 2x8s and running threaded rod through them). The number of slats joined together may be increased or decreased to create a target sized to suit the skill of the thrower. The legs are attached to the plywood with screws, as are the feet and braces to the legs, and finally a few screws into the target through the back of the plywood completes the build.
   c. **Advantages:**
      i. **Sourcing Materials.** If you can't find rounds to throw at, this target solves the problem by allowing everything to be purchased at the hardware store.
      ii. **Stability.** While not as stable as the deluxe tripod it is more stable than the basic tripod.
   d. **Disadvantages:**

i. **Mobility.** While smaller and lighter than the deluxe tripod it suffers from a similar awkwardness during transport.

D. **Metal Frame Target.**

a. **General Description.** These targets were brought in by a logging group to the Pacific Jamboree in 2015. These are heavy duty and require skill with a welding torch to build (See Diagram 10).

Diagram 10: Metal Frame Targets

b. **Construction Details.** These targets are made from lengths of square 1'' steel bar that have been bent and welded to this purpose. A steel plate with five lag bolts through it holds the round in place (See Diagram 11). The build can be made modular by having the legs slide into brackets on the plate and having these brackets rest on flanges on the legs that have been added for this purpose.

Diagram 11: Metal Target, Rear View

c. **Advantages:**
    i. **Longevity.** You wouldn't have to replace the base. Ever. Those targets would probably last for years of use.
d. **Disadvantages:**
    i. **Weight.** Carrying one of them would be a challenge for normal people. Although considerably unlikely, this construction would be damaging if tipped onto a youth.
    ii. **Supplies.** As with the tripods, finding rounds may prove challenging.
    iii. **Cost.** If you know some welders, it might not be too expensive if they can get some scrap metal, otherwise this will be the most expensive of the targets here.
    iv. **Transport.** If the metal frames don't collapse you will need a large open trailer or truck bed to transport.
    v. **Unforgiving.** The metal of the legs will damage the tomahawk blades if struck by a missed throw and quickly make them unsafe to throw. Wrapping the legs with something like layers of scrap carpet might help reduce this risk.

15. Sample Tomahawk Games and Training Exercises

A. **X Marks the Spot.**
   a. Beginner: Draw five x's on the target, and the thrower will need to hit each x.
   b. Medium Skill: The Rangemaster call out which X and they have limited time to throw at the target.
   c. Advanced Throwers: Throwers leave the tomahawks in the target and make sure that the handles of one throw doesn't interfere with the next throw.

B. **Horse:** One thrower calls the conditions. E.g. top left corner from 10 paces.

C. **Cards.**
   a. Beginner: Attach playing cards to the target board for them to hit. This can be either in a row pattern, a clock pattern or a completely random pattern.
   b. Medium Skill: Have them hit successive cards in a row. Maybe limit them to only one suit.
   c. Advanced Throwers: Have them make poker hands, blackjack hands or even a simple high card wins.

D. **What's my snack?** Place a variety of fruit/snack/dessert pictures up. Whatever they hit is what they can get from the cooler. (Have something ready in case they hit nothing though.)