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RESEARCH & DEVELOPMENT TECHNICAL CENTER
315 WEST RING ROAD
ELIZABETHTOWN, KY 42701

M/710 Design Acceptance Test (DAT #1)

Test Plan

Model 710, New Centerfire Rifle

Revision # 2

03/31/00

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M/710 Design Acceptance #1 Test Plan

Approvals

A meeting was held on 7 March 2000 to discuss the scheduled M/710 DAT #1 test. The purpose of this meeting was to define the test requirements for this Design Acceptance Test (DAT) scheduled to start in early March. During this meeting the test plan was reviewed step by step to determine what additional testing might be required to adequately test the product. This document lists the tests and procedures that have been agreed to by all meeting participants. Successful completion of these tests will qualify the Model 710 for Trial & Pilot evaluation.

The following people have reviewed this document and agree to this DAT #1 test protocol.

Dale Danner

Research & Technology

Scott Franz / Jim Snedeker

Test & Measurement Lab

Danny Diaz / Michael Keeney

Firearms Development

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**M/710 CENTERFIRE RIFLE
DESIGN ACCEPTANCE TEST PLAN - DAT #1**

Introduction:

This test is designed with the assumption that not all of the sample test guns will be available at the same start time. The initial test sample of 15 rifles will be delivered the second week in March (2000) and will be followed by an additional sample of 30-35 rifles delivered for test at a later time. Both sample sets are considered to be integral parts of the complete Design Acceptance Test Procedure.

The samples have been divided based on current estimates of sample delivery as follows. Rifles designated A1 to A15 are the first samples expected to be submitted for test on or about the 13th of March (2000) with a second group expected on about mid-May (2000) which will be designated as B1 to B30.

When successfully completing the proof test series, a 200 round per gun jack-function test is planned for the initial 15 rifle sample to quickly determine the probable malfunction rate and determine if the expenditure of further amounts of ammunition is justified by the performance of the product. Upon passing the jack-function test, the rifles will be subjected to 100 rounds per rifle test (twenty-five rounds each of four different bullet types). These rifles will be shot from the shoulder (standing position) in the long range to confirm that the rifles function as intended when shot in the same manner as expected to be used by the customer.

Various inspection points and safety reviews are scheduled into the test program.

Note that samples A1 through A15 will be shot using 3 aluminum stocks that will preclude some tests such as recoil and drop testing. The samples scheduled for delivery in mid-May will have the synthetic stocks designed for this model. Those tests requiring the use of the final design stock will be run at that time. The Intentional Abuse tests are scheduled during Phase I, (for rifles A1-A15) but will be tested without the stocks in place. Although not currently scheduled these tests may be repeated during Phase II if necessary.

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Data Required:

- Rifle serial number
- Measurement of barrel lengths in inches.

TLW0010R - Length of Pull:

Length of Pull – the distance from the center of the butt plate (from center of top (i.e. heel) to center of bottom (i.e. toe)), to the inside curve of the trigger. Measurements are taken for information only. 83

Method:

- With muzzle of rifle pointed down and barrel clamped securely in holding device
- Located the center of the distance, top to bottom of the butt pad and mark pad of butt plate
- Measure to the inside curve of the trigger (at the front)

Data Required:

- Rifle serial number
- Length of Pull measurements

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GUN CHARACTERISTICS - TLW0010S THROUGH TLW0010U:

TLW0010S - Balance Point:

Balance Point - Phase II measurement. Establish the balance point for this firearm. (This measurement will also be used later for the SAAMI drop test.)

Method:

- Using a right angle block from the metrology lab, invert the block to provide a "sharp edge"
- Close the action over an empty chamber and with the magazine empty
- Using two hands, carefully place the firearm in a horizontal orientation over the edge of the angle block with the bottom of the firearm in the down position.
- Again, using two hands, one on each side of the block edge about one foot from the block edge front to rear, carefully place the firearm on the edge and attempt to locate the balance point.
- With the assistance of another individual, place a light pencil mark at the likely balance point. After removing the firearm from the edge, measure the distance to the breech face with the bolt in the closed position. (The position of the breech face was determined when the barrel length was measured. This location, that is, the breech face can be established by measuring the specific distance from the muzzle to outside of the receiver and marked accordingly. The distance from the balance point to this breech face mark is the location of the balance point.)
- Repeat this procedure for the following condition:
 - Using .30-06 dummy shells, place one in the chamber and four in the magazine, close the action and measure the distance to the bolt face.

Data Required:

- Record rifle serial number
- Record balance point with firearm empty
- Record balance point with firearm "loaded"

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TLW0010T - Drop and Cast:

Drop at the comb -- the distance from an imaginary line drawn along the top edge of the receiver to the foremost position of the comb.

Drop at the Heel - the distance from an imaginary line drawn along the top edge of the receiver to the point on the heel of the stock.

Both of these dimensions are for information only.

Cast off (or cast on) - Not required for rifle stocks.

Method: (for drop at Comb)

- Align the top of the receiver along back edge of the Drop Board
- Measure the distance from the Drop Board to the front-most position of the Comb
- Record the distance to the nearest 1/8"

Method: (for drop at Heel)

- Using the same procedure as mentioned above, measure the distance from the closest point on the top of the heel (just ahead of the butt-pad or butt-plate backer at the edge of the stock proper) to the back of the Drop Board. Record distance to nearest 1/8"

Data Required:

- Record rifle serial number
- Record drop at comb
- Record drop at heel

TLW0010U - 50 lb. Trigger Pull Test

This test is conducted to determine if the safety mechanism will release the trigger mechanism and cause the firearm to discharge if the trigger is pulled intentionally by the shooter with the safety on the "On-Safe" position. In addition, sufficient force is applied to the trigger with the safe in the "On-Safe" position to assure

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that the trigger dimensions will not change thereby affecting trigger/sear engagement. Prior to start of test verify that trigger pull, engagement and over-travel are within recommended specifications on the sample rifles.

- Inspect and verify the rifle is not loaded and the safe is in the "On-Safe" position.
- Locate the firearm in a vertical position with the muzzle pointed up.
- Using the set of plug gauges determine the amount of minimum clearance between the rear of the trigger and the inside rear of the trigger guard. This dimension will be used as a reference to see if the trigger has been deformed by the loading in the next steps.
- Carefully load a primed case into the chamber and close the bolt.
- With the safe in the "On-Safe" position, using the NRA trigger pull rod, load the trigger with a 50 lb weight. **BE EXTREMELY CAUTIOUS TO STAY CLEAR OF THE MUZZLE IN CASE THE FIREARM DISCHARGES THE PRIMED CASE.**
- Remove the load from the trigger.
- Move the Safety to the "Fire" position, the rifle must not discharge.
- Return the Safety to the "On-Safe" position.
- Carefully remove the rifle from the holding device and with the muzzle pointed in a safe direction, pull the trigger, the rifle must discharge. Extract the shell case.
- Using the plug gauges measure the minimum clearance between the rear of the trigger and the inside rear of the trigger guard.
- Measure the trigger pull, engagement and over-travel to insure that they have not changed from the beginning of the test.

Data required:

- Rifle serial number
- Measurements of Trigger pull, engagement, over-travel and trigger/trigger guard clearance before and after loading.
- Note that the rifle "fired" or did not fire when the safety was pushed to the "Fire" position.
- Note that the rifle did "fire" when the trigger was pulled.

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FIREARMS MEASUREMENTS - TLW0010V THROUGH TLW0010Z:

TLW0010V - Chamber cast:

Use the .30-06-chamber drawing LB-153 for reference.

Method:

- Make chamber cast using standard procedure
- Use the 30" optical comparator
- Measure the following dimensions:
 - .4708/.4728
 - .4425/.4440
 - 34° 30" Angle
 - .3404/.3424
 - .3095/.3105

Data Required:

- Rifle serial numbers
- Record dimensions requested above.

TLW0010W - Bore Diameter:

Measure Bore Diameter using standard procedures.

Method:

- Measure .30-06 caliber
- Dimension equals .300/.301

Data Required:

- Rifle serial numbers

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- Measurements of each bore by serial number

TLW0010X - Groove Diameter:

Measure Groove Diameter using standard procedures.

Method:

- Measure .30-06 caliber
- Dimension equals .308/.309

Data Required:

- Rifle serial numbers
- Measurements of each bore by serial number

TLW0010Y - Twist Rate (.30-06)

Measure Twist Rate using standard procedures.

Method:

- Measure .30-06 caliber
- 1 turn in 10" \pm .25", RH

Data Required:

- Rifle serial numbers
- Measurements of each bore by serial number

TLW0010Z - Magazine Capacity Test:

Rifles with the magazine fully loaded must be able to be inserted into firearm with the bolt closed and in the locked position. Model 710 must be able to accept 4 rounds in the magazine and load into a closed bolt.

Method:

- Check rifle for live ammunition

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- With muzzle pointed in a safe direction, close the bolt and lock over an empty chamber
- Load 4 dummy rounds into the magazine
- Insert magazine into the rifle, it must lock securely in place
- Cycle the 4 dummy rounds through the chamber and eject each round
- Remove the magazine box and repeat test two additional times per sample rifle using a different magazine box each trial.

Data Required:

- Rifle serial number
- Record any failures to load and cycle properly by box and rifle

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FUNCTION & ENDURANCE TESTING:

FUNCTION AND ENDURANCE TESTING – TLW0010AA THROUGH TLW0010AE

TLW0010AA - Basic Jack Function Test (to 200 Rounds):

To get an early picture of the product's functional capability, a 200 round per rifle jack function test will be conducted. Five bullet types will be used, 40 round of each in each rifle to evaluate the potential for feeding problems. The test will be conducted in the test jacks with the "belly-protectors" in place and fully closed for each shot. All malfunctions and any unusual behavior will be noted on the data forms. The overall average of all sample rifles should be at or below 2-% malfunction rate. Up to two rifles from the sample of 15 are permitted to be removed from the averaging process if they have excessive malfunction rates relative to the remaining group of 13 samples. These rifles will be investigated by engineering to determine the probable source of the problem and engineering will provide written documentation for possible inclusion in the DAT report. No major mechanical failures are allowed in the test sample. Major mechanical failures are defined as those failures that cannot easily be repaired with simple tools and/or readily available replacement parts. At the conclusion of this test the firearms will be carefully examined for signs of excessive wear, especially with respect to the plastic components.

Method:

- Check each rifle for the presence of the proof stamp(s) – do not shoot unless the stamp(s) are present.
- Check each rifle for headspace
- Draw ammunition from stores – See test manager for ammo types to be used for this test.
- Each tester to have five rifles for test at any given time.
- The muzzle of each rifle will be inserted into the shooting port and the rifle placed securely in the test jack before the rifle is loaded.
- Load the five rounds into the rifle, one in the chamber and four in the magazine, do not shoot single shot by hand-feeding single rounds into the chamber.

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- Push the safe to the "fire" position, be sure that the barrel is far enough within the port hole so that the muzzle will stay in the port when the rifle recoils. If there is any question, re-adjust the jack into a better position.
- With the lid on the belly protector closed, fire the first round in the chamber, listen for any off-sounds, and be alert for any other unusual behavior.
- Open the bolt; eject the spent round, note any extraction or ejection problems.
- Close the bolt to load the first round from the magazine into the chamber, note any feeding or stemming problems.
- Continue to fire the remaining rounds in the magazine until the last round is fired.
- Push the Safety to "On Safe" position, the safety will be pushed to the fire position at the start of every five round trial and will be pushed to the On Safe position at the end of every five round trial. Repetitive action of the safety lever on the trigger assembly side plate needs to be determined.
- After firing twenty rounds (1 box of ammo) the rifle will be checked carefully for the presence of any live ammunition and if empty will be removed from the test jack and placed in the cooling rack. The safety will be in the "On Safe" position and the bolt will be unlocked and fully open at all times. Compressed air may be used, if necessary to cool the inside of the chamber area if the rifle is excessively hot from firing.
- All malfunctions will be recorded on the data sheets.

Data Required:

- Rifle serial number
- Tester's name
- Date of test firing
- The TLW#
- The ammunition used for the test with the ammo lot code number of the rounds actually used.
- Any malfunctions noted or other unusual items of note.

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TLW0010AB - Basic Shoulder Function Test:

To get an early picture of the product's functional capability from the perspective of the customer, a 100 round per rifle shoulder function test will be conducted to evaluate the potential for feeding problems. These malfunctions may be different from those noted in the jack test due to shooter reactions to recoil potentially affecting round position in the magazine box. The test will be conducted in the long range shooting from a standing position. Twenty-five (25) rounds each of four (4) different bullet types will be shot in each sample rifle.

All malfunctions and any unusual behavior will be noted on the data forms. The overall average of all sample rifles should be at or below the 2% malfunction rate. All rifles must pass the 2% criteria due to the small number of rounds being fired. No major mechanical failures are allowed in the test sample. Major mechanical failures are defined as those failures that cannot easily be repaired with simple tools and/or readily available replacement parts. At the conclusion of this test the firearms will be carefully examined for signs of excessive wear, especially with respect to the plastic components.

Method:

- Check each rifle for the presence of the proof stamp(s) – do not shot unless the stamp(s) are present.
- Check each rifle for headspace
- Draw ammunition from stores – See test manager for ammo types to be used for this test.
- Perform all range preparations required for shooting in the long range. Make sure the range ventilation is turned on.
- Wear safety glasses with side shields and double hearing protection.
- When ready to fire, the tester should stand in the doorway of the long range and when firing should be careful to keep the bullets in the center of the range to prevent damage to shields, lights, etc.
- Load the five rounds into the rifle, one in the chamber and four in the magazine, do not shoot single shot by hand-feeding single rounds into the chamber.
- Push the safe to the “fire” position,
- Fire the first round in the chamber, listen for any off-sounds, and be alert for any other unusual behavior.

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- Open the bolt; eject the spent round, note any extraction or ejection problems.
- Close the bolt to load the first round from the magazine into the chamber, note any feeding or stemming problems.
- Continue to fire the remaining rounds in the magazine until the last round is fired.
- Push the Safety to "On Safe" position, the safety will be pushed to the fire position at the start of every five round trial and will be pushed to the On Safe position at the end of every five round trial. The effect of the action of the safety lever on the trigger assembly side-plate needs to be determined.
- After firing ten rounds the rifle will be checked carefully for the presence of any live ammunition and if empty will be placed in the cooling rack. The safety will be in the "On Safe" position and the bolt will be unlocked and fully open at all times. Compressed air may be used, if necessary to cool the inside of the chamber area if the rifle is excessively hot from firing.
- All malfunctions will be recorded on the data sheets.

Data Required:

- Rifle serial number
- Tester's name
- Date of test firing
- The FLW#
- The ammunition used for the test with the ammo code number of the rounds actually used.
- Any malfunctions noted or other unusual items of note.

TLW0010AC - Extended Function & Endurance:

This Endurance Test will be shot to accomplish two purposes. The first purpose is to determine an estimate of the product's expected malfunction rate over an extended period of shooting. The second is to determine both the estimated life of individual components as well as the expected life (in rounds) of the product before system failure occurs. For purposes of definition, a component failure will be one that prevents (or could prevent) the firearm from functioning as intended. These are failures that can be fixed relatively easily by the simple replacement of a part such as could be done by the gun owner using only simple household tools.

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System failures are defined as failures of a major nature, the extent of which would require specialized tooling or methods to repair not normally available to the average gun owner. Such a repair would be most likely made by a qualified gunsmith or by return to the factory.

This Endurance Test will be shot in the test jacks and the testers will use gloves for protection. The covers on the "belly-protectors" will be down and in-place for each test shot. Careful monitoring of each test gun is essential to evaluate the malfunction rate for each firearm.

The standard Remington test jacks will be used for all jack-related testing.

Each rifle will be shot, using a variety of Centerfire ammunition comprised of light, medium and heavy bullets. In addition, ammunition from the three major manufacturers (Remington, Winchester and Federal) of Centerfire ammunition shall be included in the mix.

Each rifle will be shot no more than 20 rounds before being put aside for cooling. Compressed air applied to the inside of the chamber will be an acceptable method to assist in the cool-down process.

The S.A.A.M.I. recommendation for the minimum acceptable malfunction rate for a bolt action rifle is a malfunction rate of < 2%. In this case, if the overall malfunction rate average for the test samples is > 2%, the DAT test will be stopped and the guns returned to Design for modification and improvement before being re-submitted for DAT. If the overall average malfunction rate is < 2% but one of the firearms is significantly greater than 2% malfunction rate, the test may continue with the other nine test samples while Design attempts to fix the problem with malfunctioning gun. After repair, this gun will again be required to pass the 200 round jack function test at < 2% malfunction rate. If the gun passes these criteria it will then be re-introduced into the Endurance test. It is important that total endurance rounds on the gun include any rounds that are put through the gun for re-test purposes.

The test will be performed according to Remington's standard endurance test procedures for centerfire rifle. Pyramid for this test will be ten rifles to 1,000 rounds, six rifles to 2,000 rounds, three rifles to 5,000 rounds and one rifle to 10,000 rounds.

Record all instances of malfunctions and failures, and replace parts when they become unserviceable noting the round level when they were replaced.

After every 100 rounds one live round will be extracted and ejected from the chamber to check on live round ejection. The ejected round will then be re-inserted into the chamber and fired to help keep the endurance round count accurate.

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Method:

- Disassemble, thoroughly clean, lubricate per the design team's instructions, and reassemble. Record headspace for each.
- Fire each test firearm in accordance with the firing procedure (number of rounds, firing cycle) specified by engineering and the test plan.
- Ammunition will be used that comprises at least five types of bullets, change ammunition type every 100 rounds.
- Before commencing design acceptance testing, calibrate, adjust, or re-build the shooting jacks, if necessary.
- Allow the firearm to completely recover in the shooting jack between each shot and do not lean or "stiff arm" the firearm while shooting the gun.
- All ammunition is to be functioned through the magazine - no "single shot" hand feeding permitted.
- Allow the rifle to cool between cycles. One cycle is 20 rounds fired. The use of forced air to accelerate cooling of the barrels between firing trials is permitted. The air should be directed from the chamber toward the muzzle to prevent it from washing the lubricant from the firearm's action.
- Cycle the safety from fire to safe every 5 rounds, from Safe to Fire at the start of the five round cycle and from Fire to Safe at the end of the 5 round cycle.
- After every 1000 rounds, disassemble, inspect, clean and lubricate the entire mechanism and take all required measurements.
- At the initial 1000, initial 5000 and at the 10,000 round level, Magna-Flux the bolt heads.
- The Standard Remington Jacks (using the heavy configuration) are to be used for this test.

Data Required:

- Rifle serial number
- Tester's name
- The Test Jack Identification
- TLW#
- Date of actual testing
- Headspace every 1000 round interval.
- Malfunctions per ammo type, breakage, and replacement parts used.

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- Any failure that requires the gun to be removed from testing completely.
- Notify management of any unusual events or malfunctions immediately.
- Any firing of the firearm without the trigger being pulled.
- Record ammunition lot code information as it is used throughout the test.
- Bullet type used for each 100 rounds of the test.
- The results and photographs, if any, of the Magna-Flux testing.

TLW0010AD - Clean Rifles and Inspect:

After each 1000 rounds of endurance, unless other wise specified, each rifle will be disassembled, cleaned and thoroughly inspected.

A list of inspection points will be provided in the gun packet for check-off and sign-off by the inspector. The inspector will be looking for any signs of unusual wear, especially on critical components and surfaces as well as for anything such as cracks or deformed material that might present a safety concern. Photographs will be taken to document unusual wear, damage or other notable characteristics.

TLW0010AE - Dry Cycle to 5000 Cycles:

The bolt assembly will be dry cycled to determine reliability due to mechanical wear as well as verify the long term performance and reliability of the bolt and receiver assembly. The M/700 dry cycle fixture will be used to perform this test by mounting the M/710 bolt / firing pin / firecontrol assembly and cycling to a 5000 cycle level. Bolt galling and other M/710 common part failures will be noted relative to this test.

Of particular interest in this test will be the effects of wear on the plastic components in the receiver and firecontrol.

For comparison purposes a new Model 700 fire control will be run in parallel through the dry cycle machine. Headspace will be checked on both actions at each 1000 round level to determine if the lugs are wearing excessively. Photographs will be taken at the start of the dry cycle test of the bolt lugs, cam surfaces

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and other critical wear areas and repeated at each 1000 cycle level. Photographs of each critical area will be taken at each inspection level, after cleaning. Each model will be lubricated after cleaning and inspection according to the instructions that will be found in its owner's manual.

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ACCURACY TESTING:

ACCURACY AND POI TESTING – TLW0010AF THROUGH TLW0010AG

TLW0010AF - Point of Impact:

Note: This will be a Phase II test only. The barrels for Phase I will not have been angularity straightened.

The point of impact test involves the verification of the firearms sighting system adjustment and the potential to hit the point of aim. The open sights must have sufficient adjustment in either direction when the rifle is sighted in at 100 yards. Random variation and/or extreme difference in shot to shot point of impact (as well as group size) typically indicate improper barrel processing and is used as a final inspection flag in production. This test will be shot from the bench with open sights. Shoot five, 5-shot groups from each test rifle. Use the same code of ammunition for all point of impact test shots.

Method:

- Certify the ammunition selected for muzzle velocity and pressure.
- Pick the point of aim on the target
- Adjust point of aim to the bulls-eye at 100 yards.
- Slide must be adjusted to between the second line from the rear to third line from the front.
- The aperture must have the width of the screw retaining shoulder visible to either side.
- Shoot five "warmer" shots
- Shot five, 5-shot groups

Data Required:

- Measure the center of the impact groups to the point of aim in terms of "x" and "y" positions.
- Record takedown screw torque
- Record position of slide when shot
- Record ammunition lot number used during the test
- Record and label any fail-to-fire ammunition

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TLW0010AG - Group Size at 100 yards

One hundred-yard accuracy testing will be completed utilizing standard factory ammunition. The test will consist of five, 5-shot groups. Guns will be cooled after every other group. Each firearm will be cleaned and fired with five fouling shots prior to beginning the accuracy work-up. Group sizes will be measured from actual targets and recorded. The same code of ammunition and same type of ammunition will be used for all group size test shots. Average group sizes must be $\leq 3"$ at 100 yards.

Method:

- Certify the ammunition selected for muzzle velocity and pressure.
- Fire five, 5-shot groups at 100 yards, using a 36 power scope for each ammunition type selected. Prior to beginning of the test, clean the bore and shoot 5 "fouling" shots to seat in the rifle.
- Cycle the safety from fire to safe every 5 rounds.
- Accuracy should be shot from a recoiling rest. Shoulder shooting is acceptable but not the preferred way.

Data Required:

- Measure group sizes center to center
- Record takedown screw torque
- Record make and identifier of scope
- Record ammunition type used.
- Record ammunition lot numbers used during the test
- Record and label any fail-to-fire ammunition.
- Record any malfunctions that occur during the test.

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ENVIRONMENTAL TESTING:

TEMPERATURE & HUMIDITY - TLW0010AH THROUGH TLW0010AK

TLW0010AH - Hot Function Test:

This test evaluates the effect of extreme high temperatures on the functioning performance of firearms.

Method:

- Condition test firearm and 100 rounds of ammunition of each caliber in a climatic chamber for at least 6 hours at a temperature of 120 degrees F. (or as close to 120 degrees F. as the equipment can be maintained.)
- Test each firearm within the chamber as follows:
 - Fire 20 rounds of ammunition. Wait 2 hours and repeat until all 100 rounds have been fired.
 - Do not perform maintenance during the 100 round cycle.
 - Cycle the safety from fire to safe every 5 rounds.
 - The tester should wear gloves to protect his hands from the hot metal.
- After 100 rounds have been fired through each firearm, remove the firearms from the conditioning chamber, disassemble, thoroughly inspect, clean and lubricate.

Data Required:

- Record temperature and exposure times
- Record all malfunctions.
- Record damage noted during inspection
- Record all necessary maintenance actions performed

TLW0010AI - Cold Function Test:

This test evaluates the effect of extreme low temperatures on the functioning performance of the firearms. Shoot the firearm from inside the environmental test cabinet in the long range.

Method:

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- Condition the firearm and 100 rounds of ammunition of climatic chamber for at least 6 hours at a temperature of -20 degrees F.
- Test each firearm within the chamber as follows:
- Fire 20 rounds of ammunition. Wait 2 hours and repeat until all 100 rounds have been fired.
- Do not perform maintenance during the 100 round cycle.
- Cycle the safety from fire to safe every 5 rounds.
- After 100 rounds have been fired through the firearm, remove the firearm from the conditioning chamber, disassemble, thoroughly inspect, clean and lubricate.

Data Required:

- Record temperature and exposure times
- Record all malfunctions.
- Record damage noted during inspection
- Record all necessary maintenance actions performed

TLW0010AJ - Thermal Cycle Test:

This test evaluates the effects of large temperature changes due to expansion and contraction differentials of metallic and non-metallic components used in the Model 710. The sample rifle will be alternately cycled between a temperature of 120°F. and -20°F. for at least 3 complete cycles, brought back to ambient temperature and test fired in the test jacks for 200 rounds to evaluate both function and safety related characteristics.

Method:

- Shoot sample rifle in test jack to determine rifles malfunction characteristics and rate.
- Do not clean rifle
- Place rifle in freezer that is pre-set to -20°F and leave undisturbed for at least 24 hours.
- At completion of 24+ hours, remove rifle and immediately place in the pre-heated test chamber at a temperature as close to the +120°F as can be attained by the equipment. Leave rifle undisturbed for at least 24 hours.

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- At completion of at least 24 hours, remove rifle and immediately place in the freezer.
- Repeat this cycle for a minimum of three complete hot and three complete cold cycles.
- At the completion of the final cycle (the heat cycle) remove the rifle from the chamber and allow cooling to ambient temperature – a minimum of six hours.
- Inspect the rifle for any indications of damage due to the thermal cycling.
- Return the rifle to the test jack used at the start of the test and fire another 100 rounds recording malfunction types and rates.
- Remove the action from the stock and examine the rifle for any obvious signs that the thermal cycling has affected the parts with special attention directed at the metallic and non-metallic interfaces. Look for cracked parts and for signs of material creep.

Data Required:

- Rifle serial number
- Cycle time for each test condition
- Temperature records throughout each cycle. Use the chart feature on the freezer and a temperature-recording device for the chamber.
- Malfunctions type and rates both pre- and post thermal cycles.
- Observations made on cracks, creep or other noteworthy items.

TLW0010AK - Heat & Humidity Function Test:

Method:

- Shoot the firearm from inside the environmental test cabinet in the long range.
- Store the gun and ammunition for a minimum of six hours at a temperature of +100°F and 80-90% Relative Humidity.
- Shoot 100 rounds and record all malfunctions or other unusual events.

Data Required:

- Record temperature and exposure times
- Record all malfunctions.

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- Record damage noted during inspection
- Record all necessary maintenance actions performed

DEBRIS TESTING - TLW0010AL THROUGH TLW0010AN

TLW0010AL - Dynamic Sand & Dust Test:

This test evaluates the effects of blowing sand and dust on firearm performance, but the test firing is conducted after the firearm is removed from the sand and dust environment. Use the same sand and dust mixture used in the Sand and Dust Test, ⁸³

(See Table No. 1.)

Method:

- Clean and lubricate one test firearm and close the muzzle with tape.
- Close the bolt. Set the safety in the SAFE position. Load the firearm using one primed case.
- Expose the firearm as follows:
- Place the firearm in the center of the box, and fasten the box lid.
- After 1 minute, stop the blowing air, remove the lid, and turn the firearm upside down in the box. Replace the lid and repeat the sand and dust blast for another minute.
- Remove the gun from the box after first attempting to wipe clean the firearm with gloved hands. Clean parts as much as possible by blowing the rifle with compressed or shaking the firearm. Carefully remove the tape from the muzzle. REMEMBER THAT THE RIFLE HAS A PRIMED CASE IN THE CHAMBER.
- Take the rifle to a test jack in the short range.
- Place the Safe in the fire position and attempt to fire the round. Make one attempt only. If the primed case does not fire, carefully open the action and remove the primed case, dispose of properly.
- Load the magazine with live rounds and fire a full magazine from the firearm while in the test jack.
- If firing is unsatisfactory, attempt to fire with a clean magazine loaded with clean ammunition. If repeated malfunctions make it impossible to fire all of the ammunition, field strip and clean the firearm in accordance with the applicable operator's manual. Then attempt to fire the remaining ammunition, (from a box of 20

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cartridges.) If repeated malfunctions make it impractical to fire the remaining ammunition, stop the test. Cycle the safety from fire to safe every 5 rounds.

- At every 5 round interval verify the firearm is not loaded.
- Close the firearm as if to fire it and put the safety to the SAFE position
- Pull the trigger firmly (10 lb. maximum) - firearm must not fire.
- With the finger off the trigger, move the safety to the FIRE position - firearm must not fire.
- Disassemble the firearm over a large white paper and weigh the amount of debris present in the main mechanism

Data Required:

- Record malfunctions.
- Record number of rounds fired.
- Record weight of debris found in the gun.
- Record any firing of the firearm without the trigger being pulled.
- Record any misfires.

TLW0010AM - Static Sand & Dust Test:

This test is the second of two that evaluates the effect of sand and dust on firearm performance, where the test firing is conducted after the firearm has sand and dust directly placed in the action. Thus, an exposure box is not required. For Sand & Dust composition see Table No. 1.

Method:

- Clean and lubricate one test gun to the procedure supplied by the design team.
- Remove the bolt. Set the safety in the SAFE position and verify that the firearm is unloaded.
- Record the weight of one level tablespoon of debris mixture.
- Expose the firearm as follows:
 - Place the firearm in a shooting jack, bottom of rifle up, and apply a tablespoon of sand in the firecontrol mechanism from the bottom. Tap the firearm three times, in the middle of the receiver, to jar the rifle and to assist getting sand into the mechanism.

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- Turn the firearm to its normal upright horizontal position and apply a tablespoon of sand and dust to the top of the firecontrol mechanism from the top. Tap the firearm three times, in the middle of the receiver, to jar the rifle and aid sand getting into the mechanism.
- Replace the bolt. Wipe away any sand that prevents the bolt from closing.
- Load the magazine. Fire a full magazine from the firearm. If there are repeated malfunctions, attempt to fire with another magazine. If firing is still unsatisfactory, attempt to fire with a clean magazine, container, etc., loaded with clean ammunition. If repeated malfunctions make it impractical to fire the remaining ammunition (from a box of 20 cartridges), stop the test.
- At every 5 round interval verify the firearm is not loaded.
- Close the firearm as if to fire it and put the safety to the SAFE position.
- Pull the trigger firmly (10 lb. maximum) - firearm must not fire.
- With the finger off the trigger, move the safety to the FIRE position - firearm must not fire.
- Carefully disassemble the firearm over large sheet of white paper and weigh the amount of debris that finds its way into the main mechanism area.

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TABLE No. 1. COMPOSITION OF SAND AND DUST MIXTURE

(by percent particles, by weight, retained in sieves)

<u>Sieve Size (US gage sieve no.)</u>	<u>Percent of weight retained</u>	<u>Particle Size (microns)</u>
20	3	842 to 1000
30	5	595 to 841
45	17	355 to 595
60	14	251 to 354
100	10	150 to 250
pass 100	less than 1	----
140-mesh silica flour		
140	1	105 to 149
200	4	74 to 105
325	7.5	44 to 74
pass 325	37.5	less than 44

Data Required:

- Record malfunctions.
- Record number of rounds fired.
- Record weight of debris found in the gun.
- Record any firing of the firearm without the trigger being pulled.
- Record any hang fires.

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TLW0010AN - Field Debris Test:

This test determines the effect of "field debris" on firearm performance, where the firing is conducted after the firearm has field debris directly placed in the action. See Table No. 2 for field debris composition.

Method:

- Clean and lubricate one test gun to the procedure supplied by the design team.
- Remove the bolt. Set the safety in the SAFE position and verify that the firearm is unloaded.
- Record the weight of one level tablespoon of field debris mixture per following table.
- Expose the firearm as follows:
 - Place the firearm in a shooting jack, turn bottom side up, and apply a tablespoon of debris in the firecontrol mechanism from the bottom. Tap the firearm three times, in the middle of the receiver, to jar the rifle and aid field debris getting into the mechanism.
 - Turn the firearm to its normal upright horizontal position and apply a tablespoon of field debris to the top of the firecontrol mechanism from the top. Tap the firearm three times, in the middle of the receiver, to jar the rifle and aid the debris getting into the mechanism.
- Wipe away any debris that prevents the bolt from closing. Clean parts as much as possible by blowing sharply or wiping.
- Fire a full magazine from the firearm. If repeated malfunctions make this impossible, attempt to fire with another magazine. If firing is still unsatisfactory, attempt to fire with a clean magazine, container, etc., loaded with clean ammunition. If repeated malfunctions make it impractical to fire the remaining ammunition (from a box of 20 cartridges), stop the test.
- Cycle the safety from fire to safe every 5 rounds.
- At every 5 round interval verify the firearm is not loaded.
- Close the firearm as if to fire it and put the safety to the SAFE position
- Pull the trigger firmly (10 lb. maximum) - firearm must not fire.
- With the finger off the trigger, move the safety to the FIRE position - firearm must not fire.

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- Disassemble the firearm over white paper and weigh or measure the amount of debris present in the main mechanism area. Debris should be removed from the parts for weighing.

Data Required:

- Record malfunctions.
- Record number of rounds fired.
- Record weight of debris in the gun at the conclusion of the test.
- Record any firing of the firearm without the trigger being pulled.
- Record any hang fires.

Table No. 2 - Field Debris Mixture (By Volume)

Dried Grass Clippings	2 parts
Toothpicks (round, .25" long max.) to represent twigs	1 part
Bird Seed	1 part
Table Salt	1 part
Small Stones (.015" dia. to .125" dia.)	1 part
Crushed Dry Leaves	2 parts
Pine Needles	1 part
Hair Samples (no longer than 2 inch)	1 part

MISC. TESTS - TLW0010AO THROUGH TLW0010AP

TLW0010AO - Rain Test:

Use Standard Remington Rain test procedure using the Salt Fog Chamber.

Rifle must function without any safety related malfunctions.

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TLW0010AP - Solvent Testing:

For any non-metallic components in the M/710 that have not previously been tested for the effect of solvents, use Remington standard procedure to solvent test these new components. For some components where there is not enough material in one gun to properly test the sample, secure additional components from Design to complete the testing. If there are components that require testing then use the following procedure:

Tests will be conducted in accordance with ASTM D543-87, which calls for 24-hour immersion in solvents followed by a property evaluation. Hardness or stiffness is the property measured for this test, either quantitatively or qualitatively (where quantitative measurements were impractical). Solvent effects in polymers range from no effect to complete decomposition. Parts that absorb solvents may permanently discolor, crack, craze, or otherwise display failures. The parts also may simply take up solvent when immersed and yield the solvent back when exposed to air with no other property change other than temporary modulus (stiffness) reduction. To support this observation, it is often helpful to separate parts by their amount of solvent uptake, so that the large solvent uptake parts can be more carefully examined.

The receiver insert will be specifically tested for this DAT.

Method:

- Obtain untested chemicals.
- Weigh and obtain hardness readings on the test specimen(s).
- Place the specimen(s) in a container so that they are completely covered by the solvent. Leave at rest in the container for 24 hours.
- Remove and wipe the specimen(s) until they are dry. Weigh and obtain hardness readings on the test specimen(s).
- Leave the specimen(s) to air dry an additional 24 hours. Weigh and obtain hardness readings on the test specimens.
- The list of solvents, lubricants and production chemicals commonly used with and around firearms is found in below:

Remington Oil
Remington Bore Cleaner

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- Break Free Bore Cleaner
- Birchwood-Casey Gunscrubber
- Remington Action Cleaner
- Hoppe's Oil
- Hoppe's #9 Solvent
- TPC Solvent
- LP-1 Lubricant
- Thin Film Lubricant
- Steel Guard
- Molycoat Paste
- Molycoat Powder
- Cobratec

Data Required:

- Record part weights before and after test.
- Record part hardness before and after test.

ABUSIVE TESTING

IMPACT TESTING - TLW0010A0 THROUGH TLW0010AV

TLW0010A0 - SAAMI Drop Test:

This test will simulate abusive dropping of the firearm from a distance of 48 inches onto a 1" thick 85 durometer (Shore A) rubber mat backed by concrete. Trigger Pull weight will be adjusted to minimum specification (3-1/2 lb.) The Trigger/Sear engagement will be set to the minimum specification (0.020"). Test will be performed according to SAAMI Technical Committee procedures. Magazine capacity will as well be according to SAAMI procedures. After each series of test, the primed case will be discharged to insure validity of test. This test will be performed on a sample of four firearms (for Phase I) and six firearms (Phase II) of .30-06 calibers only and six rifles of .270 caliber when available.

Method:

- With the firearm safety in the SAFE state, the firearm shall be capable of passing the below test criteria for drop testing from a height of four feet onto an 85±5 Durometer, Shore A, rubber mat, one-inch thick backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and

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come to rest without interference within the perimeter of the mat. The four feet shall be measured from the surface of the rubber mat to the center of gravity of the firearm. The center of gravity shall be determined to an accuracy of \pm one inch by any recognized method for finding the center of gravity of an irregular shaped object. The primed case shall be discharged following the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.

- The firearm or firearms shall be dropped in such a way as to strike the rubber mat surface once in each of the following attitudes:
 - Barrel vertical, muzzle down.
 - Barrel vertical, muzzle up.
 - Barrel horizontal, bottom up.
 - Barrel horizontal, bottom down.
 - Barrel horizontal, left side up.
 - Barrel horizontal, right side up.
- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the firecontrol lubricated as in the owner's manual.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm.
- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record round level

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TLW0010AR - SAAMI Jar-Off Test:

The objective of the jar-off test is to simulate the abusive impacting (bumping) of the firearm against a hard surface with the firearm in a condition of maximum readiness. With the firearm in the ready to fire condition, the firearm shall be capable of withstanding a jar-off shock equivalent to being dropped from a height of 12" inches onto a 1" thick 85 Durometer (Shore A) rubber mat backed by concrete. Trigger Pull weight will be adjusted to minimum specification. The test will be performed according to SAAMI Technical Committee procedures. Magazine will be loaded to maximum capacity with dummy rounds according to SAAMI procedures. A fresh primed case will be chambered prior to each drop. After each drop the primed case will be discharged to verify its validity. This test will be performed on a sample of firearms made up of .30-06 caliber.

Method:

With the firearm cocked and the safety in the FIRE position the firearm shall be capable of withstanding jar-off shock equivalent to being dropped from a height of twelve inches onto a 85±5 Durometer, Shore A, rubber mat, one-inch thick backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall within the perimeter of the mat striking the mat once. The twelve inches will be measured from the test surface to the lowest point on the firearm. As an alternate to free dropping, other methods may be substituted if they provide equivalent impact characteristics. The primed case shall be discharged following the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.

- The firearm or firearms shall be dropped in such a way as to strike the rubber mat surface once in each of the following attitudes:
 - Barrel vertical, muzzle down.
 - Barrel vertical, muzzle up.
 - Barrel horizontal, bottom up
 - Barrel horizontal, bottom down.
 - Barrel horizontal, left side up.
 - Barrel horizontal, right side up.

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- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the firecontrol lubricated per the owner's manual.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm.
- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record engagement and trigger pull.
- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record the round level on the firearm.

TLW0010AS - SAAMI Rotation Test:

The test will be conducted according to SAAMI Technical Committee procedures. The firearm will be placed in the "Safe-Carrying" condition and dropped from an upright position with its butt resting on the surface of a 1" thick 85 durometer (Shore A) rubber mat backed by concrete. Trigger Pull weight will be adjusted to minimum specification. Magazine capacity will as well be according to SAAMI procedures. The firearm shall be tested (dropped) on both the right and left sides. After each rotation, the primed case will be discharged to insure validity of test.

Method:

- With the firearm safety in the SAFE state, the firearm shall be capable of passing the below test criteria when allowed to fall freely from an upright position with its butt resting on the surface of a 85±5 Durometer, Shore A, rubber mat, one-inch thick backed by concrete. The mat and concrete shall be large enough so that when the gun falls it will come to a rest without interference within the perimeter of the mat. The firearm shall be tested so as to fall once on its right-hand side and once on its left-hand side. The primed

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case shall be discharged following the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.

- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the firecontrol lubricated per the owner's manual.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges, inserted in the firearm.
- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record round level on the firearm

TLW0010AT- Extended SAAMI Jar-Off Test: (for Information only.)

With the intent to establish design margin this test simulates the abusive impacting (bumping) of the firearm against a hard surface with the firearm in a state of maximum readiness under conditions more severe than the SAAMI recommendations. This test will be performed on a sample of six (Phase II) (or the number available after performing the std. SAAMI tests) firearms.

Method:

- With the firearm cocked and in the safety in the FIRE position the firearm shall be dropped from a height of 18 inches, 24 inches, and 48 inches onto a 85±5 Durometer, Shore A, rubber mat, one-inch thick backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall within the perimeter of the mat striking the mat once. The distance of drop will be measured from the test surface to the lowest point on the firearm. The primed case shall be discharged following

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the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.

- The firearm or firearms shall be dropped in such a way as to cause it to strike the rubber mat surface in each of the following attitudes:
 - Barrel vertical, muzzle down.
 - Barrel vertical, muzzle up.
 - Barrel horizontal, bottom up
 - Barrel horizontal, bottom down.
 - Barrel horizontal, left side up.
 - Barrel horizontal, right side up.
- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the firecontrol well lubricated with Rem-Oil.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm.
- Conduct this test at 18 inches, 24 inches, and 48 inches.
- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record engagement and trigger pull
- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record the round level on the firearm

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TLW0010AU - Extended SAAMI Rotation Test: (for Information only.)

With the intent to establish design margin this test simulates the abusive fall of a firearm when left leaning against a vertical surface under conditions more severe than the SAAMI recommendations. This test will be performed on a sample of six (Phase II) (or of those still available) firearms.

Method:

- With the firearm safety in the SAFE state, the firearm shall be capable of passing the following test criteria when allowed to fall freely from an upright position with its butt resting on the surface of a tiled floor backed by concrete. The firearm shall be tested so as to fall once on its right-hand side and once on its left-hand side. The primed case shall be discharged following the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.
- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the fire control well lubricated with Rem-Oil.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges, inserted in the firearm.
- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record round level of the firearm.

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TLW0010AV – Extended SAAMI Drop Test: (for Information only)

With the intent to establish design margin this test simulates abusive dropping of the firearm in conditions more severe than the SAAMI recommendations. This test will be performed on a sample of six (or of those still available) firearms.

Method:

- With the firearm safety in the SAFE state, the firearm shall be dropped from a height of 6 feet and 8 feet onto a 85± 5 Durometer, Shore A, rubber mat, one-inch thick backed by concrete. The mat and concrete shall be large enough so that when the gun is dropped it will fall and come to rest without interference within the perimeter of the mat. The drop height shall be measured from the surface of the rubber mat to the center of gravity of the firearm. The center of gravity shall be determined to an accuracy of ± one inch by any recognized method for finding the center of gravity of an irregular shaped object.
- The primed case shall be discharged following the drop and a fresh primed cartridge re-chambered prior to the next drop. A "fresh" firearm may be substituted into the test at any point.
- Test Procedure - The firearm or firearms shall be dropped in such a way as to strike the rubber mat surface once in each of the following attitudes:
 - Barrel vertical, muzzle down.
 - Barrel vertical, muzzle up.
 - Barrel horizontal, bottom up.
 - Barrel horizontal, bottom down.
 - Barrel horizontal, left side up.
 - Barrel horizontal, right side up.
- Tests shall be conducted with the trigger pull force set at the minimum force specified, with engagement set to the minimum specified, and with the firecontrol well lubricated with Rem-Oil.
- The test shall be conducted with the magazine or clip fully loaded with dummy cartridges and inserted in the firearm.

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- Parts breakage or other damage as a result of drop testing does not constitute failure as long as the empty primed case does not fire and the firearm can be unloaded safely after each drop. More stocks are required than the amount of test guns to allow for breakage due to the drop testing. If a stock cracks - replace before continuing test.

Data required:

- Record whether or not the firearm fires an empty primed case of its designated cartridge when tested in accordance with this procedure.
- Record round level on the firearm.

INTENTIONAL ABUSE- TLW0010AW THROUGH TLW0010AY

Note that for all of the following tests, the rounds are to be loaded remotely and the test setup shall have the capability of unloading live rounds remotely if required.

TLW0010AW - Pierced Primer Test:

For this test, a firing pin will be altered to have a "wedge-shaped" point. This type of firing pin point should produce a pierced primer when fired. The purpose of piercing the primer is to allow high-pressure gases to escape into the action and thereby determine the effect of high-pressure gases when dumped into the bolt, magazine box and receiver areas. All standard Remington high-pressure ammunition safety procedures will be used for this test. A standard round of .30-06 ammunition will be used.

After firing the rifle will be examined for damage. Photographs of damaged components will be taken and kept for record. The rifle will be tagged and saved for possible future review.

Method:

- Position firearm in test jack located in the "Blow-up" room with the muzzle through the port.
- Set witness paper at the rear of the action perpendicular to the bore.
- Locate witness paper at the approximate location expected for the shooter's face.
- Set up the High Speed Video to tape the firing test.
- Fasten a lanyard around the stock and run through the trigger guard in front of the trigger.

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- Load a standard factory .30-06 round into the chamber, and carefully close the bolt.
- All personnel are to leave the room.
- When ready to conduct the test start the high speed video and pull the lanyard.
- Carefully examine the scene looking for any broken or missing parts, holes in the witness paper etc.

Data Required:

- Rifle serial number.
- The condition of the witness paper.
- Notes of any broken or missing parts.
- Photographs of broken or missing parts.

TLW0010AX - High Pressure Test:

The rifle will be tested to 120,000 psi. The purpose of this test is to determine the extent of damage if an individual does purposely or accidentally handload an extremely high pressure load. Use standard Remington high-pressure ammunition safety procedures for these tests. The pressures for the test round will be worked up using various grain size loads giving pressures below 95,000 psi, (approaching the limits of the transducer gauges.) The grain size load will be plotted and a curve extrapolated to determine the load expected to produce a load of approximately 120,000-psi.

All testing will be done in the blow-up room using the high-speed video camera and witness paper. Before removing or otherwise disturbing the test samples after blow-up, photographs will be taken for the record. After collection and removal of the parts additional photographs of the various individual components will be taken for the record. All parts will be put in sample bags, boxed and temporarily stored for review if required.

TLW0010AY - Obstructed Bore Test:

One of the sample rifles will have a rifle bullet driven into the bore to a position immediately ahead of the chamber. A standard round (.30-06, 220 gr. factory load) will be loaded and fired remotely. All testing will

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be done in the blow-up room using the high-speed video camera and witness paper. Before removing or otherwise disturbing the test samples after blow-up photographs will be taken for the record. After collection and removal of the parts additional photographs of the various individual components will be taken for the record. All parts and will put in sample bags, boxed and temporarily stored for review if required.

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