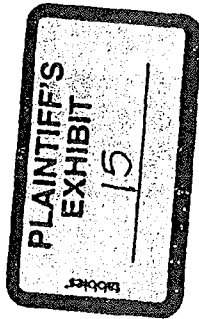


# *Sportsman M/710 Bolt Action Rifle*

## Design Concept Review I



# *Sportsman Model 710 Concept Review Agenda*

- Review Program Objectives, Design Goals,  
Status and Schedule ----- Danny Diaz
- Review Two piece Stock Concept----- Derek Watkins
- Review One piece Stock Concept----- Derel Watkins
- Collect and Record Input ----- Team
- Review Conclusions ----- Danny Diaz

# *Sportsman M/710*

## *Program Objectives*

- Design and Manufacture a low end bolt action rifle with the highest possible profit margin.
- Enter the market in year 2000.
- Sound aesthetics
- Performance equal to or exceeding competitors similar offerings.
- ✓ Savage 111, Marlin MR-7, and Winchester 70

# *Sportsman M/710*

## *Marketing Specifications*

- Bolt action - short & long action (including magnums)
- Standard barrels lengths (22" - 24")
- Synthetic stock with recoil pad & swivel studs
- Wood stock added in the future based on investment & stock cost
- Floor-plate or detachable box magazine (lowest cost)
- Reasonable bolt action grade trigger (comparable to competitive products)
- Inexpensive metal finish (uniform without turn rings)
- Inexpensive adjustable sights as option
- Accepts after-market scope bases (bases not included with gun)
- MSP \$229 (non-magnum synthetic)
- NSP \$188 (non-magnum synthetic)
- Target Margin 45% (non-magnum synthetic)
- Target manufacturing cost \$103 (non-magnum synthetic)

# *Sportsman M/710*

## *Design Alternatives*

□ Modify current line (i.e. M/700)

✓ Pro's

- as a company we have a large expertise base
- large number of parts
- known and accepted performance characteristics

✓ Con's

- limited design changes
- limited changes to current processes
- tolerances sensitive

# *Sportsman M/710*

## *Design Alternatives*

### □ New design

#### ✓ Pro's

- design for ease of manufacture
- reduction in component number and complexity
- designed for possible use new state-of-art processes
- incorporate tolerance insensitive design of components
- drop out firecontrol

#### ✓ Con's

- new unknown design; new firecontrol; cast receiver
- lack of expertise with possible new processes
- new stock design

# *Sportsman M/710*

## *Design Objective*

- ✓ design a high margin quality centerfire rifle family.
- ✓ simple innovative design
  - user friendly
  - reliable, robust, and durable design
- ✓ easy to manufacture, eliminate costly process
- ✓ designed to accept new cost effective state-of-art process
  - high speed machining, forging, semi-solid forming, and new assembly technologies
- ✓ share a common backbone of parts.
- ✓ performance bench mark - M/700

# *Sportsman M/710 Design Path*

## ✓ Design Concepts

### → Two piece stock

- *synthetic two piece stock*
- *investment Cast Receiver*
- *unidiameter Bolt*
- *synthetic trigger guard/housing*
- *Clamped barrel*

### → One piece stock

- *Synthetic or wood*
- *Extruded Tube Receiver*
- *conventional trigger housing*
- *threaded barrel*
- *metal clip*



# *Sportsman M/710; Two Piece Stock Investment Cast Receiver*

- *Investment Cast Receiver*
  - *near shape*

# *Sportsman M/710; Two Piece Stock*

## *Unidameter Bolt*

- *Unidameter Bolt*
  - *Elimination of the broaching operation*
  - *Bolt handle & bolt body*
  - *Field Strippable*

# *Sportsman M/710; Two Piece Stock Safety & Trigger Guard*

- Synthetic trigger guard/housing
  - modular
- Safety
- Tang - three (3) positions

# *Sportsman M/710; Two Piece Stock Barrel*

- Barrel
  - Clampable
  - Barrel bolt locking system
  - 3 lugs
  - Three ring of steel
  - 5R riffling

# *Sportsman M/710; Two Piece Stock FireControl & Magazine*

- *Fire Control*
  - *Linkage system*
  - *Tolerance insensitive*
  - *Lock Time < 4ms*
  - *Minimum cocking forces*
- *Magazine*
  - *Synthetic clip*

*Sportsman M/710*  
*Two Piece Stock*

Two piece stock ( )

# *Sportsman M/710; One Piece Stock - Extruded Tube Receiver*

- Extruded Tube Receiver
  - eliminate bolt key broaching

*Sportsman M/710  
One Piece Stock - Threaded barrel*

→ threaded barrel



*Sportsman M/710*  
*One Piece Stock*

Stock ()

# *Sportsman M/710 Development Schedule*

- Project Definition ----- September 2, 1997
- Process Investigation ----- September 3, 1997
- Concept Design Phase ----- October 17, 1997
  - Concept Program Review 1 ----- February 20, 1998
- Preliminary Design Phase ----- March 3, 1998
- Initial Prototype Evaluation Phase ----- June 6, 1998
- Design Phase ----- August 5, 1998
- Engineering Evaluation Testing ----- November 5, 1998
- Final Design ----- May 14, 1999
- Design Acceptance Test ----- August 27, 1999
- Design Transmittal ----- October 8, 1999

# *Sportsman M/710*

## *Action Items*

- Phase II of the process investigation.
- Competitive analysis
- Build ten (10) 4X4 firecontrol for EET
- Engineering Evaluation Test for 4X4
- Concept design Configuration analysis
- Concept design bolt locking system FEA
- Concept Design Review I
- Complete modeling of concept design
- 710 Firecontrol Initial evaluation (3 units)