ROYAL ARMOURIES

British WW 1 18 Pound Quick Firing Field Gun

Irish Army Civil War Artillery

Condition report

Figure 1 the gun in the location it was inspected for this report

Introduction 18 PR QF Field Gun

This gun is believed to be one given to the Free State forces during the 1922 civil war and later sold to the American government who subsequently sold on the guns to collectors or other private individuals. This gun was recently discovered in Virginia USA and has the "FF" Fianna Fail (Soldiers of Destiny) marking stamped on it the breach. (See Figure 2) This and the makers and UK war department mark gives the gun its provenance to fit with the know history that guns were given to the Irish Free State Forces by the British. Although it beyond the scope of this report to verify the history of this gun it is essential to have an understanding of the guns history to produce a treatment proposal from this condition report/ survey. There is no reason

to question the above brief history of this gun although more historical research would be desirable in the future. The reason not to doubt the history of the gun is the "FF" Fianna Fail marking appears to be created in the past and has the an even amount of corrosion, this appears to be uniform corrosion and the amount is similar to the other markings, see the section of the report for markings on the gun.

Markings on the gun.

Figure 2 The markings on the breach

The gun has several markings and numbers on various parts of the gun, the most important markings and numbers are the on the breach end of the barrel as this gives us the maker, date and guns number. The other markings that are important in this area are the War department mark and the FF mark.

The gun is marked "Q.F. 18 PR Mk II*", this is identifies the gun as a mark 2 quick firing 18 pounder. This is in the same font as the maker's name W.B. & Co. this is the well know maker of William Beardmore and Company Glasgow, after the makers name there is the date 1918 this again is in the same font. Above the makers name but below the type (Q.F. 18 PR MkII*) there is the war department arrow mark to the left of the war department mark if the FF for Fianna Fail mark this is in a different font and is a later addition to the gun and appears not to of been added recently. There are two letter "P" added in this area both of different sizes one appears that it could be the same font as the makers name the other is smaller. Finally, in this section under the makers name is the number of the gun "No. 9168". See figure 2 for illustration of the markings. These markings in the breach area are in good condition for age and considering the gun has been exposed to external environmental conditions for a number of years, there is some loss of sharpness. This loss of sharpness will increases during conservation treatment when the corrosion is naturalised.

Figure 3 an example of markings on the gun.

There are also markings on other parts some theses are difficult to see as the corrosion is sev ere in some places most of these markings will be part numbers and dates. The condition of these markings will v ery depending on the amount of corrosion present at each location of the markings. These areas with markings will need sensitiv e conserv ation treatment as explained in the treatment proposal methods. Blast media of any kind should not be used in these areas; also blast media should not be used on brass in any situation.

Figure 4 the markings on the recoil.

The recoil is an area that has markings of interest; theses marking indicate that the unit has been tested although this is at time of manufacture. There are other markings in this section of recoil see figure 4.

General Condition

Figure 5 the gun from the trail

The gun is in an unfortunate condition and requires urgent conservation treatment starting with a professionally written treatment proposal in order to agree methods and create an order of works. The amount of treatment required is that a timescale of 18 -22 months with between 24-32 hours worked a week on the project would be realistic and longer if the hours are between 6-12 hours worked on the gun per week.

Conservation professionals would describe the guns condition as extremely poor; this is why the gun requires intensive time-consuming conservation treatment.

Figure 7 Close up of the underside of the barrel and shield showing the difference in corrosion intensity.

The poor condition of the gun is because in part the gun has been stored outside in inclement weather in Virginia USA where the average precipitation in this area is 43.32 inches per year and the average relative humidity ranges from 43% to 91% with most days above 50%. The suggested RH storage for uncoated metals is 40% (+or – 5%) RH. This average weather results in the creation of corrosion species of moisture and oxygen been regularly exposed to the gun combined with the degradation of the protective coating (probably an alkyd paint) and the little or no conservation treatments. This has let the gun become heavily corroded in many areas and the most of the moving parts to become seized as result of corrosion and the breaking down of the protective coatings. This rating of extremely poor condition with the current level of corrosion will mean that many of the conservation treatments required will have to be completed by hand. The corrosion has also caused permanent damaged as when the gun is treated there will be areas of pitting remaining, for example under the barrel the corrosion is intense and uneven however the lower area of the shield has more even uniform corrosion and will result in a more even finish when treatment is complete. However, even with this more even corrosion there is still the possibility that there will be pits left after treatment. (See figure 7)

Figure 8 corroded part with damaged fastenings.

The parts seized by the corrosion will also result in disassembly issues during treatment as the corrosion has created wear on nuts and bolts, also the corrosion on the threads will affect the removal of the part been removed this damage will result in unavoidable loss of material although this could be microns it is still not desirable. Fortunately, in this situation the nuts and bolts will be British standard imperial sizes that can be replaced, as this standard is still available. However, the will class the project as a restoration project as to a conservation project, this is acceptable but

replacement should be kept to a minimum, if this is to done within industry standards of restoration ethics this replacement of nuts and bolts should not in this case of greatly affect the historic integratory or v alue of the object. (See figure 8)

The paint has degraded to a point where about 80% is missing and this will require treatment to replace the coating as the paint acts as a protectiv e coating on this gun. The brass work has also been painted, it is not necessary to paint brass. Brass wound not hav e originally been painted at time of manufacture. Ov erpainting of brass lowers the condition rating of the gun. Fortunately this process is fairly simple to rev erse although time consuming.

The abov e information giv es a brief ov erall summery of the ov erall condition of the gun and a condition rating of extremely poor, the report will now look at major parts on the gun in more detail.

The Trail

Figure 9 the trail

The trail has the previously mentioned corrosion issues. (See figure 9) The condition is not improved by the mud combined with roots that has been left on the end of the trail under the lifting brackets. (See figure 10) In this area there is a small steel plate although this appears to have enough material to conserver the level of corrosion is such that it might become apparent during treatment that the plate has corroded through. The rivets in this section also appear to be sound but there will be some material loss and this could leave the rivets slightly misshapen but this should be difficult to notice when viewing the object on display.

Figure 10 close up of the one of the lifting brackets mud and root visible

Figure 11 the end of the trail and towing eye.

The end of the trail including the towing eye is in a similar state with mud left on the surface; although the area is complete the condition is again affected by corrosion. The area in this section that is in the most degraded condition is the shaped steel plate around and each side of the towing eye. It is possible that water has sat in this area for prolonged periods and this has an increased the level of corrosion. The edges of the steel plate appear to of lost some definition through material loss. This might be more visible after conservation /restoration treatment.

Figure 12 the trail from the side

The condition of the main tube is poor with more or less 100% corrosion over the surface area; in some areas this is heavily pitted. The pitting will remain after treatment as it is considered unethical to fill in pitting in conservation and restoration. Treatment as suggested in the treatment proposal completed by the Royal Armouries will improve the condition to good when treatment is complete. (See figure 12)

Figure 13 Close up of the trail lift leaver fitting.

The trail leaver fitting is also completely covered in corrosion with a fair amount of pitting over the surface. The plate that joins the lifting leaver to the main tube by

rivets is present but in poor corroded condition. Care need to be taken to preserve this fitting during treatment to keep the integrity of the gun. (See figure 13 and 14) An 18 PR with the leaver welded on not using the rivet method is illustrated in figure 14.

The leaver and leaver locking mechanism on the Irish 18Pr are totally covered in corrosion and this will have seized the moving parts making the leaver inoperable and therefore requiring intensive conservation treatment.

Figure 14 close up of a leaver fitting welded back in place leaving the rivet holes open

The Wheels

Figure 15 the pneumatic wheels

The wheels are not original and are a conversion to pneumatic tyres completed by Martin Parrey, this is a common feature with WW1 artillery and was often done at the time of the Second World War. The wheels can be converted back to replica cartwheels without effecting the integrity or value of the object. This because wheels were often replaced in the field during service, therefore, it would be unlikely to find a gun with the original wheels throughout the history of artillery.

The axletree has an even layer of corrosion over the entire surface and some pitting most of this appears to be not too deep into the material. (See figure 15)

The condition of the pneumatic wheels and associated parts including the breaking system is poor a corrosion rate of near 100% of surface area is present, if the moving parts are not seized then they are moving dry without lucubration, running dry for long periods of time will cause damages to the wheel system. The tyres are both in poor condition and the only solutions if the pneumatic wheels are to be displayed is replacement or to have the gun blocked on stands if a purist conservation approach is decided upon. (See figure 15)

The stakeholder's intention is to convert the wheels back to cartwheels; this would be a pragmatic option for display context, as it would display the gun in the state at the time of the Irish civil war. If this option is taken then the pneumatic conversion should be kept in store at the same location as the gun.

An option would be to conserve the pneumatic wheels in their current state as a physical record of the guns condition before conservation /restoration and the conserved pneumatic wheels could be displayed with some interruption alongside the gun.

The condition of the fixings of the wheel system is poor because of heavy corrosion on most of the parts this might be the cause nuts and bolts to become misshapen. The unit will require careful removal to avoid damage. (See figure 16) This section includes the gunner's seats that are in a similar condition and will require removing and refitting if the wheels are changed along with the breaking system. (See figure 16)

Figure 16 the wheel and gunner's seat system

The Elevating Mechanism

Figure 17 the elevating mechanism

The elevating mechanism is corroded with main screw in an extremely sorry state this would have been coated with grease or other lubricant during service and during the period of no conservation maintenance, the lack reapplication of this coating has caused the current condition. The coating when it degrades can also assist corrosion when combined with moisture and oxygen. (The Royal Armouries is currently conducting research in this subject). The main screw has lost some material because of the corrosion; therefore, the edges have lost some definition as this damage is permeant it could affect the efficiency of the mechanism. However, the gun is not to be returned to full service condition the mechanism can be treated to return to as near service condition as possible this would be acceptable for display and keeping the integrity of the gun.

The other moving parts are in a similar condition to the main screw and it is reasonable to suggest that the parts that cannot be inspected would be in a similar or slightly better condition. It should be noted that the hand wheel has been painted and there is little corrosion present this because they are possibility brass and will require brass conservation treatment. However, the holding nut and thread are steel

and in poor condition and require treatment; the nut is also misshapen because of corrosion damage. (See figure 18)

Figure 18 the hand wheels for the elevating and traversing mechanism

The traversing mechanism

Figure 19 close up of the traversing mechanism

The traversing mechanism is in a similar condition to the elevating mechanism with the steel parts heavily corroded, some brass parts overpainted and moving parts seized up with lack of lubricant. (See figure 18 and 19)

The elevating range scale mechanism sight rests.

Figure 20 the elevating range scale

The range scale and hand wheel are in poor condition, the range scale steel wheel is corroded to such an extent that retrieving the scale might be beyond current conservation methods. If this is the case and with the level of surface pitting it would appear that it is, then a replica could be created for display and the current range scale treated and stored with the gun. (See figure 20 the elevating range scale and 21 a restored range scale on a different WW1 18Pr.) The bass arm with a an elevating scale engraved on it should return to as near service condition with conservation treatment currently this is overpainted; therefore; the condition rating is poor, the same goes for the hand wheel on elevating range scale mechanism.

The moving parts are seized and again the fixings will have suffered from corrosion and will require treatment to improve the condition from poor to display or as near service condition.

The hand wheel paint is different to the rest of the gun it should be noted that this could be original paint and would require researching the paint colour could be the colour of the gun during the Irish civil war.

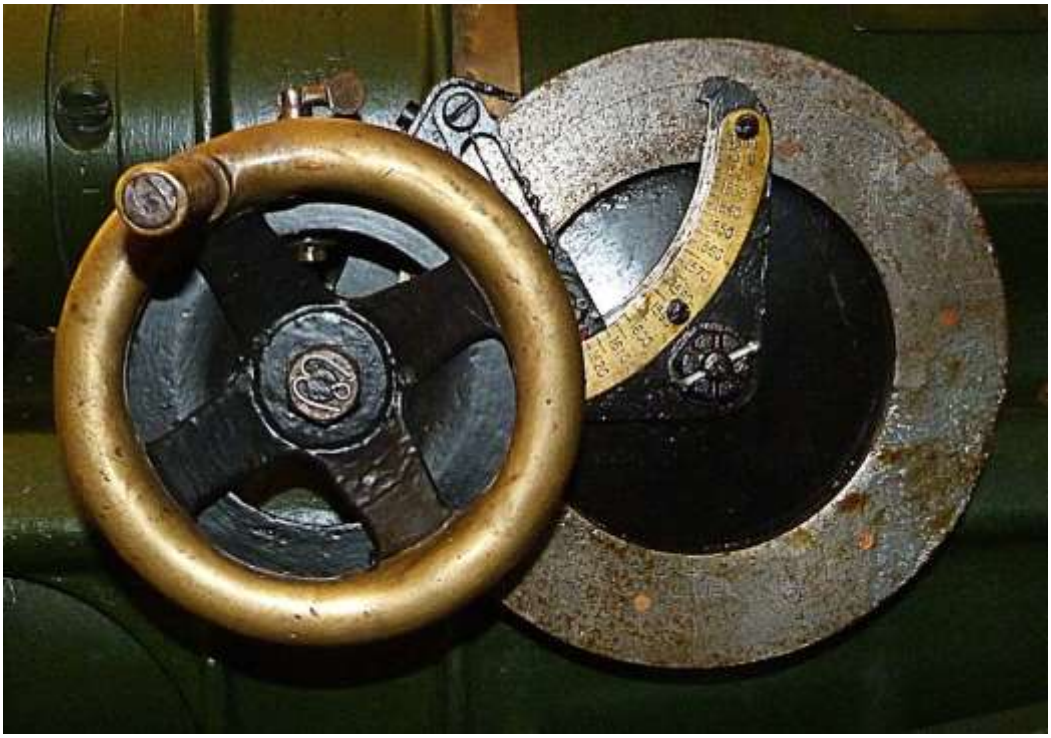

Figure 22 a restored range scale on a different WW1 18Pr

Figure 23 the sight rests.

The sights rests are in poor condition similar to the range gauge mechanism with steel parts heavily corroded and the brass parts heavily over painted. The same treatments as the range gauge mechanism to improve the condition of these parts to museum/historic object standard is required. (See figures 23 and 24 for conserved sight rest on a different 18Pr)

Figure 24 the sight rests

The Breach and Firing lock

Figure 25 the breach

The breach and firing lock has the corrosion issues that are present on the rest of the gun as previously discussed; these are the degradation of the protective coating and the formation of advanced corrosion, and these issues results in seized moving parts. (See figure 25) Another issue is that the breach has been welded closed this has possibly been done to deactivate the gun. If this is the case there are other methods of deactivating the gun to improve the condition it would be advisable to consider reversing this weld. (See figure 26)

Figure 26 the breach with the welded

The Shield

Figure 27 the back of the shield

The back of the shield in in poor condition with both corrosion and flaking paint across the surface, the leather fittings on the proper right side degraded and on the left is complete apart from the clasp on the pouch, but are in poor general condition. (See figure 27 and 28)

Figure 28 close up of the leather pouch on the proper left side and the damaged paintwork

Figure 29 font of the shield

The front of the shield is also in a similar condition to the back, with heavy corrosion but less degraded paint, the leather is also degraded and if required for display would have to be replaced because of the poor condition. The hatch for the rammer is also corroded with active pitting corrosion; the rammer is believed to be missing. (See figures 29 and 30)

Figure 30 the hatch for the ramrod.

The shield also has two parts missing two extensions one on the top that folds down one the front and one on the bottom that folds up. Replicas of these parts could be considered for display if required. (See figures 31 and 32 for shield extensions on a different gun)

Figure 31 top extension on a different gun

Figure 32 the lower extension on a different gun

Recoil Mechanism

Figure 33 the recoil

The recoil is in poor condition with the steel work corroded and the brass work overpainted and the rope round the recoil is missing and should be replaced.

Figure 34 the recoil from the proper right side

In addition, one of the fixings on the front appears to have pushed back into the recoil unit, the rest of the fixings on the front appear to be corroded and misshapen. The rest of the fixings are also in poor condition and the recoil and barrel are possibly fused together and on the carriage.

Figure 35 the front of the recoil

The Barrel

Figure 36 the underside of the barrel

Figure 37 the barrel under the recoil

The barrel is heavily corroded and again degraded paint is present the corrosion has caused loss of material this is more noticeable on the underside. (See figure 36.) The fixings to the recoil and carriage are also in poor condition as previously mentioned the recoil and barrel poor condition might result in difficulty separating them for treatment, this could mean that is not possible to use blast media.

The Inside of the Barrel,

Figure 38 the inside of the barrel

The inside of the barrel has not been fully inspected with a bore scope but the muzzle end that is visible has an even coating of corrosion and some degraded paint. The corrosion would probably extend down the length of the barrel inspection during treatment with a bore scope would be desirable. (See figure 38)

The Rest of the Carriage

Figure 39 The makes label on the carriage

The rest of the carriage suffers from the same problems of corrission degrading paint, seized and misshapened fixings. It should also be noted that the carriage has a different makers name to the barrel this is not uncommon in artilery as the parts were interchanble. This will not effect the intergtary of the object as it is possiable that this is the original carriage as curent resaerch suggests William Beardmore and Company Glasgow only made the 18pr barrels and not carriages, also the date is the same as the barrel. Howev er, Vickers Sons and Maxim (V.S.M.) manufactured both carriages and barrels. This is a historical research question that could benefit from further inv estigation. (See figure 39) Some other objects that hav e maraiges can be a cause for concernan an exapmple would be clock mov ments an non original case.

Summary

The gun is in a consistent poor condition with corrosion and paint degradation issues across the entire gun not just the parts that this report looks at in detail although there is a recurring theme through the report of the corrosion and degradation issues. The corrosion has permanently damaged the gun with the resulting pitting

and material loss. The other major issue is that the fastenings have been damaged by corrosion this will make them difficult to remove and conservation treatment will take longer as more care and treatment will be required.

Conclusions

The gun is in a situation where it requires urgent conservation treatment to prevent further loss of material and eventual total loss. The gun is currently not beyond returning to a near service condition that is desirable for museum display on industrial objects.

The conservation of this gun will be a fairly long process because of the overall poor condition rating and the timescale of 19-22 months mentioned ant the beginning of this report might need extending as the extent of work becomes clear with disassembly. The cost of conservation wok completed in house would be between 12,000 and 22,000 euros depending on how cost are calculated and any funding bids should include an additional amount of to the estimated cost as a contingency fund in any budget plan proposed to potential funders.

The final conclusion of this condition report is that although the gun condition rating cannot be any higher than poor this gun is of such is of historical importance that conservation is essential to preserve important national history of Ireland.

Matthew Hancock Ba (Hons) Ma **Conservator Fort Nelson**

Royal Armouries