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Editor's Post

¶ It is with regret that I note the passing of Lorne James on November 25, 2025. Lorne was an early member when the Study Group was revived in 1980 (his member number was M20) and a contributor to the work that led to the 4th Edition of Canadian Stamps with Perforated Initials. He also contributed a short piece to the 100th Edition of the Perforator (November 1996) telling the story of how he came to be a perfin collector.

¶ This month we welcome new member Michel Bénard to our Study Group. The current newsletter distribution list remains at 76.

¶ The cost for distributing 4 copies of this issue was $20.00 for printing and again there was no cost for postage. The 2025 financial report is on page 13.

¶ Thirteen individuals attended our Study Group seminar at the BNAPS Virtual Seminar and Conference held Saturday, January 30th. There two presentations. I showed examples of S22 perfins postally used in Montreal with suggestions on how these came about (see pages 5-11 in this issue). Russell Sampson showed a Cummins Model 52 perforator from the USA and with detailed photographs spoke to its manufacture and operation. A full article will be forthcoming.

¶ A reminder that ORAPEX, the Ottawa philatelic exhibition, is coming at the Nepean Sportsplex, 1701 Woodroffe Avenue. The dates are:

Saturday, 2 May, 10 am - 6 pm
Sunday, 3 May, 10 am - 4 pm

The show is "top drawer' and I plan to be there both Saturday and Sunday.

¶ I close this Post with some very exciting news—Conrad Tremblay's original S22 Sun Life fonds have been located. These are the source material for Addendum I of the Handbook, the S22's reported by City, including the die sequence each, first proposed by Tremblay. The images are in fact photocopies of photocopies and of very poor quality. Tremblay's original working files were with fellow Study group member Luc Legault and he, very generously, has made all of the files available to the Study Group Editors. The files contain the original die proofs at 400% of their actual size—the images he used to distinguish one die from another. The immediate impact of this is that Addendum I of the Handbook can be amended to included these images.

Surprisingly, to me at least, Tremblay's file do not have any notes or diagrams that distinguish one die from another. In the longer term perhaps the Study Group members will be able to identify those individual die characteristics which will enable everyone to distinguish each die from all the others. Accomplishing this could make Addendum I truly unique. Page 14 has a proposal how this might be accomplished.

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A New Canadian Perfin from Swift and Company, Chicago.

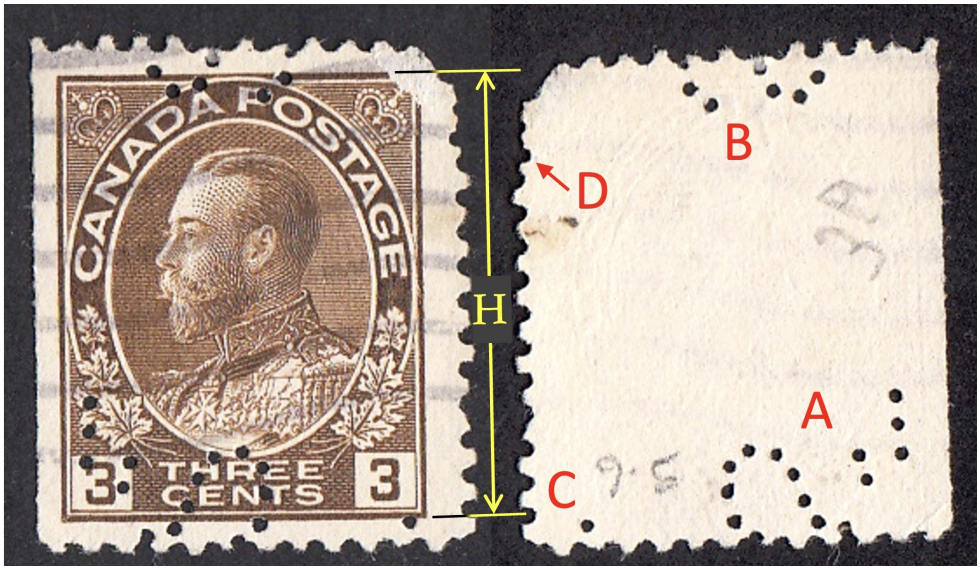
Reported by Jean-Guy Dalpé

By: Russell D. Sampson, Stephen Endicott and Jean-Guy Dalpé

Sept. 7, 2024 to February 7, 2026

Extraordinary claims require extraordinary evidence.

Carl Sagan[1]



Figures 1 and 2: The suspected S6 Dalpé specimen on Unitrade 108. Note the four partial perfin patterns labelled A, B, C and D. The arrow with pattern D points to the perfin perforation masquerading as a stamp perforation. The value *H* is the height of the inked area (21.5-mm) and is used in the estimation of the perfin inter-die spacing.

ABSTRACT

Digital image analysis of a suspected S6 perfin (Swift and Company, Chicago) on a Unitrade 108 from the collection of Luc Legault as reported by Jean-Guy Dalpé, suggests that the perfin is a closer match to the US S002-63 than either the Canadian S6 or the US S002-63A. This suggests that the specimen may represent either a) a constant perfin die variety of the S6 and thus the two US perfins are from a single machine or b) it is a new Canadian pattern and thus the S002-63 and S002-63A are from two different machines. After an in-depth analysis and consultation with Stephen Endicott, the US Perfin Catalog chairman and editor, the weight of the evidence appears to strongly favour the two-machine hypothesis and thus the Dalpé specimen is likely a new Canadian perfin pattern. Additional analysis has revealed that the perfin and thus the US S002-63 was likely produced from a multi-die perforating machine.

INTRODUCTION

The Canadian versions of the Swift and Company perfins (i.e., the S5 and S6) that originate from its American headquarters in Chicago, Illinois (see Figure 3) are both rare and somewhat controversial. The S6 was removed from the 5th edition of the BNA Perfin Handbook[2], where it stated "Perfin removed. Is not found on Canadian Stamps". Then, with the authenticated report of a Unitrade 327 with the S6, the perfin was subsequently reinstated in the 6th Edition[3]. During peer review of this manuscript Jim Graham discovered that a suspected S6 (position 6) also on Unitrade 108 was reported in the Conrad M. Tremblay 2001 position survey[4]. This Trembley specimen has yet to be authenticated. However, Jean-Guy Dalpé has now provided high-resolution scans of a Unitrade 108 specimen which, after the following extensive analysis, has provided evidence of a new Swift & Co.

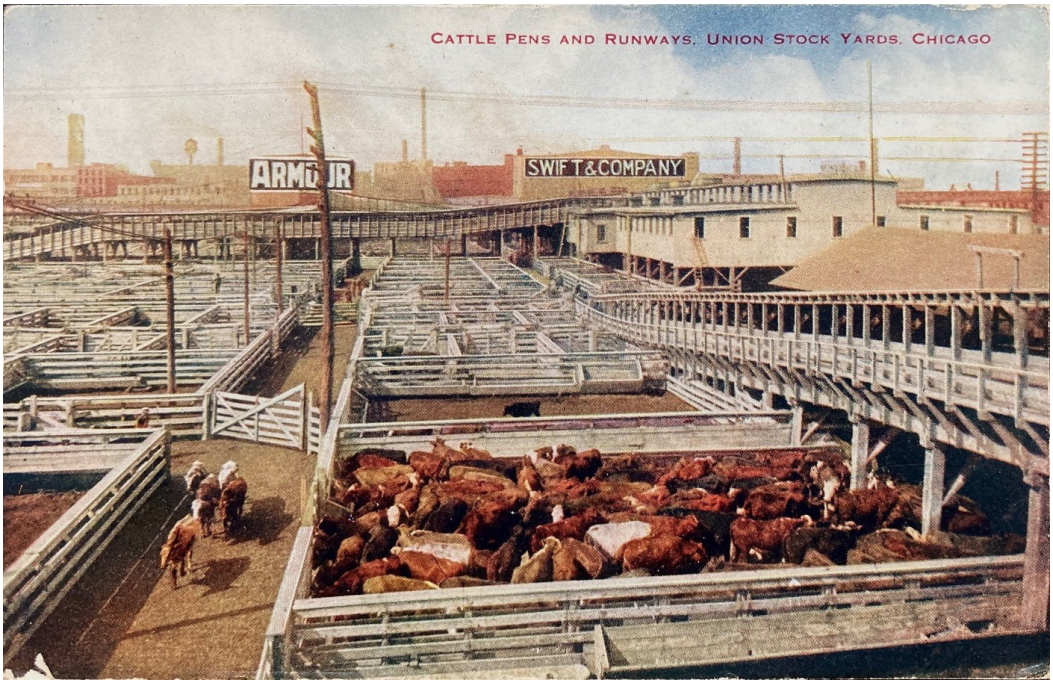


Figure 3 : A postcard from the Sampson collection showing the Chicago stockyards with Swift & Co. in the background.

It should be noted that the perfin in Figure 1 and 2 is owned by Luc Legault with Jean-Guy Dalpé acting as the collection's curator and manager. After consulting with Legault, Dalpé and Bob Szymanski it appears that this specimen likely originated from the collection of the late Conrad M. Tremblay. However, some uncertainty still remains since the S6 on Unitrade 108 specimen reported in the 2001 Tremblay position survey was recorded as position 6 while the specimen in this analysis is position 4, thus suggesting the possibility that either the perfin position of the Tremblay specimen was reported in error or that a second specimen may exist.

The Dalpé scans closely resembles the two American perfins S002-63 and S002-63A. Which one of the American perfins the Dalpé specimen is closest to is crucial in determining whether this specimen represents a new Canadian perfin pattern. However, since the difference between these two American perfins is very subtle, the analysis necessary to establish the Dalpé specimen as a new Canadian pattern required significant evidence along four (4) crucial paths of enquiry.

Firstly, the Admiral stamp itself needed to be identified since wet-printing versus dry-printing varieties of the Unitrade 108 places the date of the stamp's issuance in two different eras (1918 versus 1923).

Secondly, the S6 pattern in the Canadian perfin Handbook[3] had to be positively identified as originating from either the American S002-63 or S002-63A machine.

Thirdly, the Dalpé specimen needed to be identified as not a Canadian S6 but a closer match to the other US perfin.

Finally, it had to be firmly established that the American S002-63 and S002-63A were not perfin die varieties from a single machine but were more likely from two different machines.

Therefore, the subtle differences between the Dalpé specimen and the known and accepted Canadian perfins (i.e., the S6) necessitates a rather complex investigative sequence which in turn demanded a relatively high level of empirical rigor. As a result, conclusive evidence of such a discovery required careful analysis along multiple lines of inquiry. Like in a court of law, or a scientific investigation, a single line of evidence is often not sufficiently convincing to turn a scientific hypothesis into a theory or an opinion into a beyond-a-shadow-of-a-doubt verdict. At the end of this investigation the final results – for and against – shall be presented. It should also be noted that this investigation required the friendly cooperation from two sides of the perfin border – American and Canadian.

THE STAMP AND ITS PERFIN

The scans provided by Jean-Guy Dalpé of the suspected S6 on Unitrade 108 (3-cent brown Admiral) appears in Figures 1 and 2. The stamp appears to be the "wet printing" version (i.e., Unitrade 108) since the ratio of the width to height of the inked pattern from the digital image of the Dalpé specimen is 0.817 (i.e., 570 pixels divided by 698 pixels = 0.817) while the same ratios from the Van Someren online article "Guide to Admiral Stamps of Canada"[5] is 0.814 for wet printing and 0.837 for dry printing. The difference between the ratio from the Dalpé specimen and the Van Someren wet printing specimen is only 0.4% or about 0.07-mm and could be easily attributed to the common vagaries from paper, printing, scanning and measurement. Therefore, this analysis firmly establishes that the Dalpé Unitrade 108 specimen has an issuance date of August 6, 1918 rather than 1923 for the accepted issuance date of the dry printed version (i.e., Unitrade 108c)[6] . This wet versus dry printing analysis will assist in placing constraints on the possible usage date of the Dalpé specimen which shall prove vital in a later section of this investigation.

The perfin pattern is oriented at position 4 and it appears to present four (4) partial perfin patterns. These partial patterns are marked A, B, C and D in order of their completeness (see Figure 2). Partial pattern D appears to be made of a single perfin perforation masquerading as a stamp perforation. Its identity as a perfin perforation is revealed by a) its smaller apparent diameter compared to the stamp's perforations (nine pixels wide for the suspected perfin perforation, versus 10 to 11 pixels for the stamp perforations), and b) by its position being slightly out of alignment with the stamp's perforations. Partial perfin pattern D may have also contributed to the rather dramatic tear and thin of the stamp at this location. The proximity of the partial perfin to the edge of the stamp may have caused the tear-line of the stamp to deviate dramatically from the stamp's perforations.

It is interesting to note that the S6 reported in the 2001 Trembley Canadian perfin position survey[4] was reported as position 6 while the specimen in this analysis is position 4 thus suggesting that a second specimen may exist.

A more complete pattern of the perfin was digitally assembled and appears in Figure 4. This was achieved by 1) making two copies of the scan of the back of the Dalpé sample, then 2) selectively removing the surrounding black background of the scans using the "Remove Background" option in PowerPoint, then 3) making one copy of the scan 50% transparent (found in the "Format Pane" of the "Picture Format" tab in PowerPoint), then 4) bringing this 50% transparent copy to the front of the right-hand copy (also found in "Picture Format") then finally, 5) carefully aligning the transparent copy overtop of the original until the two partial perfin patterns were in registration. This assemblage will prove useful in deciding which kind of machine – single or multi-die – produced this perfin.

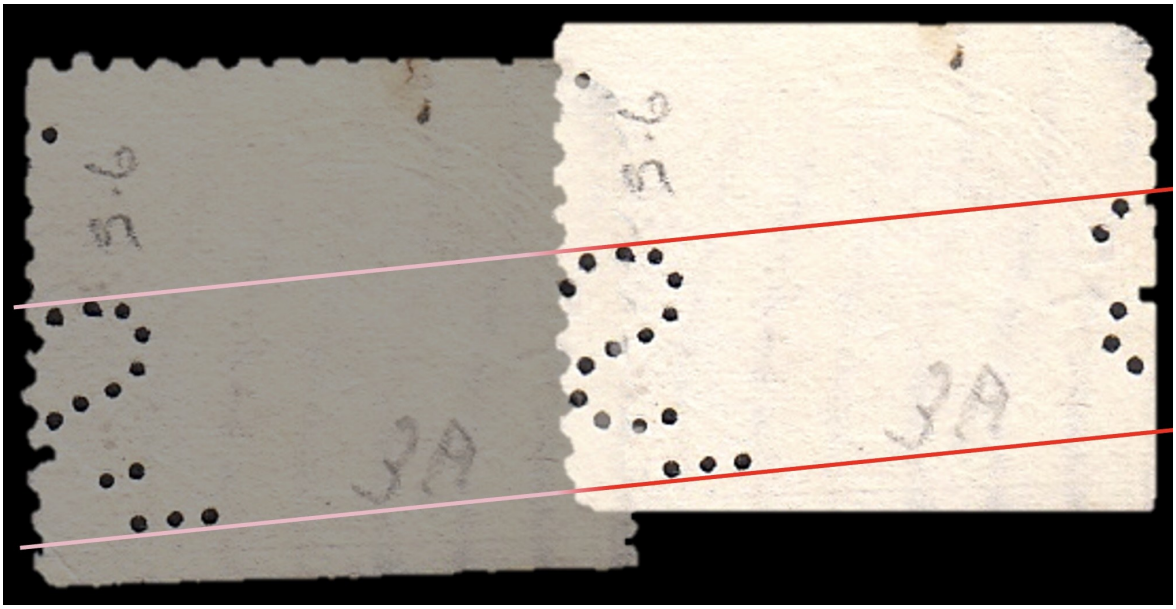


Figure 4 : A digital reconstruction of the fuller perfin pattern. This was achieved by digitally overlapping partial pattern B with partial pattern A. Red lines show a high degree of parallelism in the pattern and thus suggest a multi-die machine.

The unusual nature of both the position of the Dalpé perfin (i.e., position 4) and the slant of the perfin pattern with respect to the stamp itself is also very revealing as to the likely origins of this specimen. As has been demonstrated by statistical research on the B15 (Bell Telephones) done by Jim Graham and the author[7], the more unusual perfin positions (e.g., position 2, 4, 6 and 8) are found more frequently on the more unusual stamp denominations (i.e., the less commonly used stamp issues). In the case of the Dalpé specimen, it is abundantly clear that Canadian stamps processed through an American perforating machine would have been unusual indeed. This assumption is clearly supported by the extreme rarity of the S6 perfin. It is easy to imagine a workplace scenario requiring the need of a small number of Canadian postage stamps for an employee traveling to Canada on company business. Such a small and special order may have required the operator of the perforating machine to interrupt the consistency found in their assembly-line of American perfins and place a small number of these Canadian stamps through the machine and thus producing the odd and awkward positioning of the stamps seen in Figure 1 and 2.

COMPARISONS WITH US/CANADA PROOF IMAGES

As discussed above, a fascinating complication arises when one examines the Catalog of United States Perfins[8]. There appears to be two Swift and Company (Chicago) perfin patterns with the same telltale triple code holes: the US S002-63 and its look-alike the S002-63A.

To examine the relationship between the Dalpé specimen and these two US perfins and how it all fits with the Canadian S6 perfin, a digital image analysis was performed. This was done by making digital copies of the proof images from the US and Canadian catalogues, importing these images into PowerPoint, then colorizing them to distinguish each proof image from each other. Then the Dalpé specimen was imported into PowerPoint, turned 50% transparent, scaled to the catalogue proof images, then carefully moved overtop until they were registered as closely as possible (see Figure 5).

It is apparent from this analysis that the Dalpé specimen is a very good match with the proof image of the US S002-63 (Chicago) but is not a good match with either the S002-63A (Chicago) or the Canadian S6. Could this mean the discovery of a new Canadian pattern? It is important to note that the deviations between the Dalpé specimen and the S6 are almost exactly the same as those differences found between the Dalpé specimen and the S002-63A. This clearly suggests the S6 and the S002-63A are the same pattern.

At this point however, caution is recommended because the possibility still exists that the S002-63 and the S002-63A are simply die varieties from a single

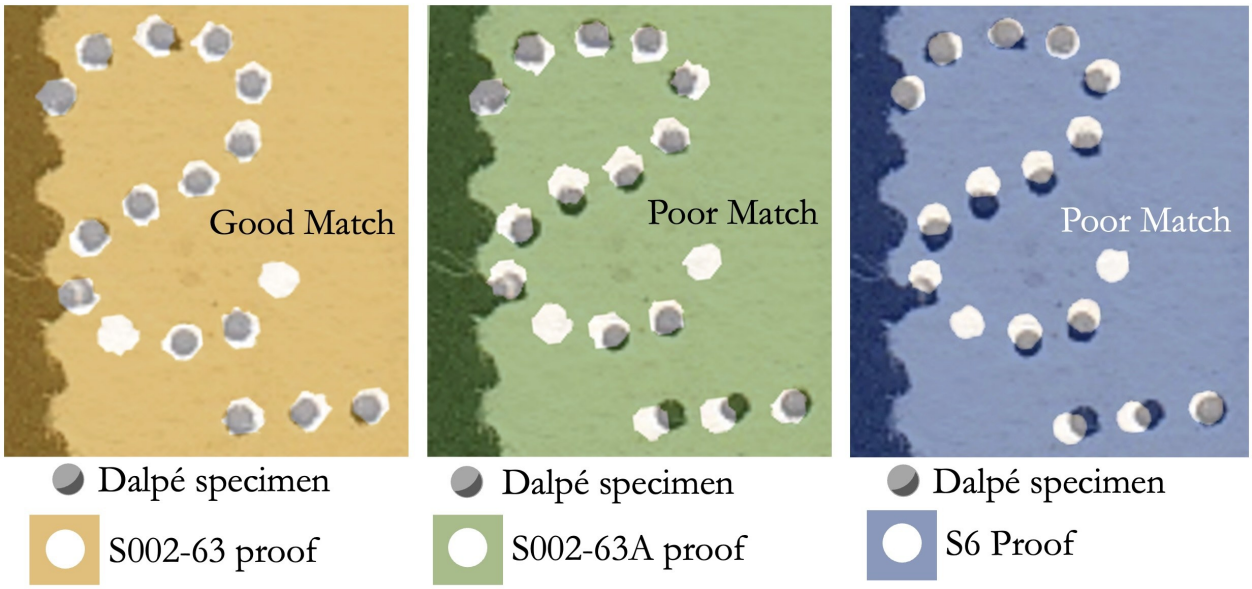


Figure 5: A digital image analysis of the Dalpé specimen and the American S002-63, S002-63A and the Canadian S6. It is apparent that the best match is between the Dalpé specimen and the American S002-63 and not the S002-63A and not the Canadian S6. It is important to note that the deviations between the Dalpé specimen and the S6 are almost exactly the same in direction and magnitude as those found between the Dalpé specimen and the S002-63A which clearly suggests the S6 and the S002-63A may be the same pattern.

machine. This hypothesis and the above results suggest that further research is necessary to determine whether the US S002-63 and S002-63A are two different machines. If after careful research, it is revealed that there were two different machines then the Dalpé specimen may then legitimately represent a new Canadian perfin pattern.

Current evidence for a die variety from a single machine includes the following. First, both the S002-63 and S002-63A are claimed to originate from the same city. Secondly, the Swift and Company perfins often employed code holes to distinguish different machines and therefore, if there were two machines it is reasonable to assume they should have had significantly different code holes – which do not occur on these two perfins. However, this line of evidence is based on assumptions and therefore is somewhat circumstantial and – like in a court of law – carries lesser weight. What is needed is solid empirical evidence for or against these competing hypotheses.

EVIDENCE FOR TWO MACHINES

It is abundantly clear that to conclusively establish that the Dalpé specimen is a new Canadian perfin, it was necessary to determine – beyond a shadow of a doubt – that the S002-63 and the S002-63A were made from two different machines. Therefore, one needs to delve deeply into these two American perfins. This is the crux of the argument – all depends on this analysis and its results.

To proceed, the first author reached out to The Perfins Club for assistance in deciphering these two US perfins. Stephen Endicott – chairman and editor of the US Perfin Catalog – graciously provided a pivotal re-analysis of the S002-63 and S002-63A specimens contained in his collection[9]. This reanalysis provided crucial – possibly conclusive – evidence in support of the two-machine hypothesis. What follows is how this was achieved.

The key to any progress lay in telling the difference between the two US perfins and then confirming all specimens were correctly identified. A direct comparison between the two US perfins was performed (see Figure 6). From this analysis, it is apparent that not only are the three (3) code holes in different positions with respect to the "S" but the shape of the "S" is also noticeably different between the two perfins. Specifically, the top of the "S" is more squished in the later S002-63A than the earlier S002-63. With these telltale differences now firmly established, the extensive Endicott collection of US Swift & Co perfins could now be re-analyzed and more confidently dated.

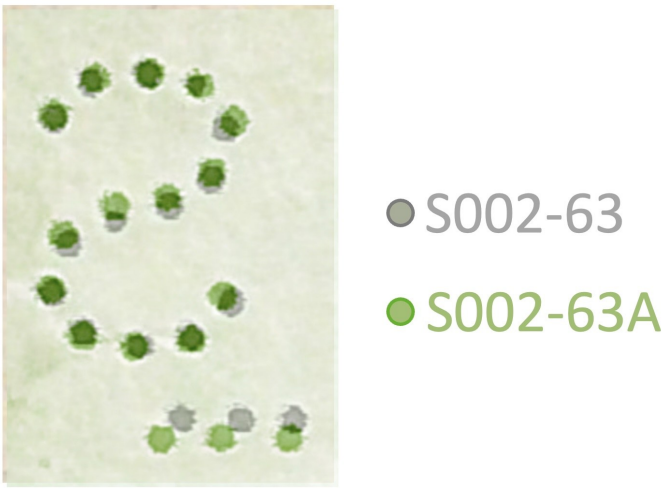


Figure 6: Digital image analysis of the S002-63 versus S002-63A showing the distinct differences between the two American perfins.

After the Endicott collection was re-analyzed, the situation changed significantly (see Figure 7 and 8). After this re-analysis it became clear that the S002-63 now has an earliest reported usage (ERU), derived from cancellations, of July 9, 1912 while the S002-63A has an ERU of August 1, 1941. The latest reported usages (LRU) of the S002-63 were found to be June 15, 1914 while the LRU of the S002-63A was September 24, 1949. The issue history of the two American perfins also changed significantly. The S002-63 was found on American stamps with issuance dates ranging from 1908 to 1922, while the S002-63A American stamp issue timeline was now from 1926 to 1948. The graphical timeline in Figure 8 clearly shows that the two American perfins do not appear to overlap, thus providing significant evidence in favor of the two-machine hypothesis.

At this point, it is extremely instructive to show how this reanalysis changed the results of the original investigation by the first author. The original timeline was produced by the dates contained in the first edition (2018) of the US perfin catalogue[8]. This analysis showed considerable overlap of the two US perfin in their period of usage with relatively short time periods both at the beginning and the end of the timeline where only one perfin pattern was reported (see Figure 7). These exclusive regions provided evidence in favor of the two-machine hypothesis but it could be argued that these periods were too short to provide conclusive evidence. Thus, the evidence in Figure 7 was not felt to be compelling enough to confirm that the two US perfins were not die varieties from a single machine. Now, as seen in Figure 8, the situation appears

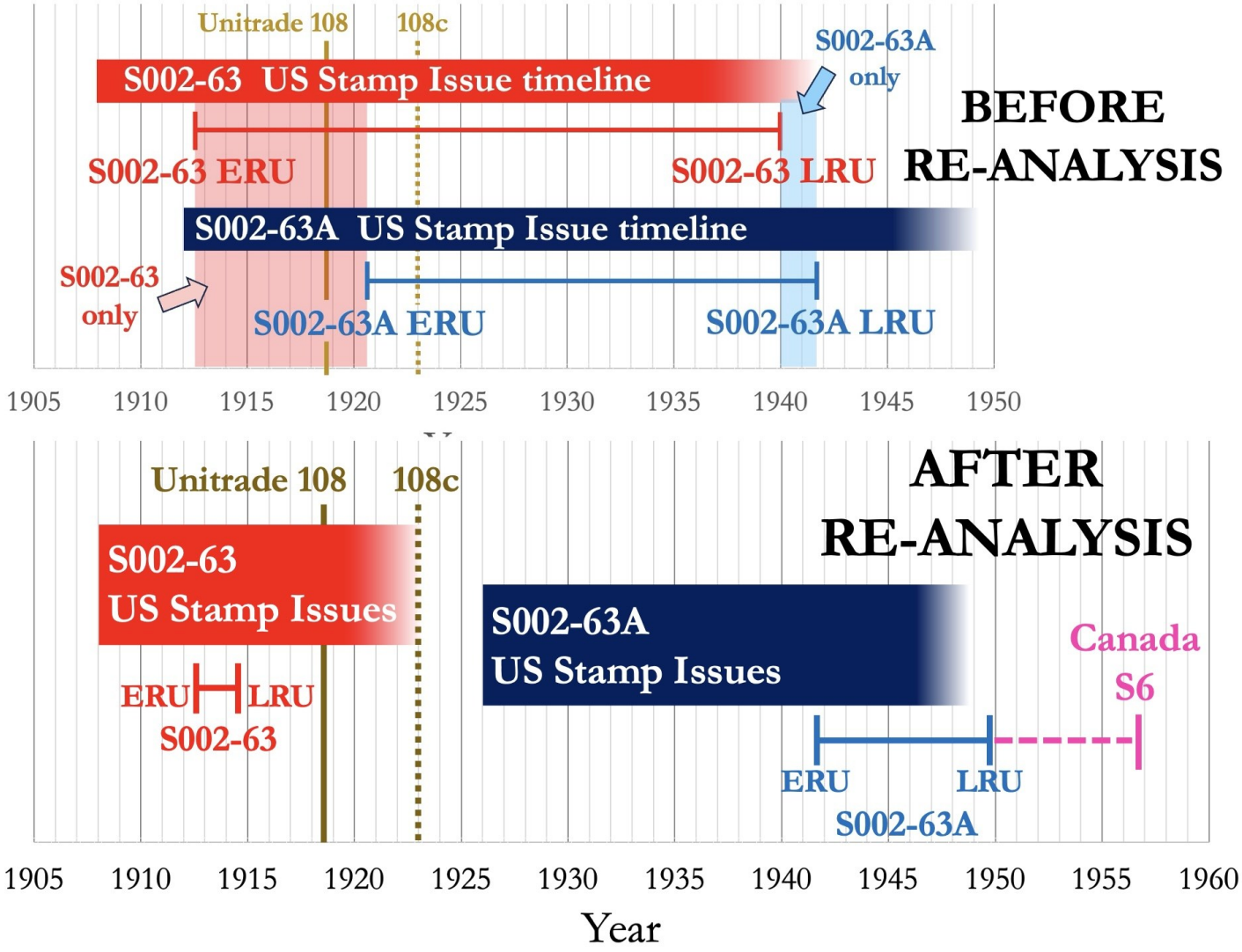


Figure 7 and 8: Timelines of the usage of the S002-63 and S002-63A showing a period where the S002-63 was exclusively reported (pink shaded area) and when the S002-63A was exclusively reported (blue shaded area). Also, it is crucial to note that the stamp issues found on the S002-63A extend more than 10-years past those of the S002-63. These two timelines fade rather than stop abruptly since perfins can appear on stale postage long after the issue date of the stamps. The brown lines are the issuance date of the wet printed Unitrade 108 as found on the Dalpé specimen and the dotted line in the dry printed 108c. The location of the Unitrade 108 inside the exclusive S002-63 zone is evidence for the Dalpé specimen being from the S002-63 and it being a separate machine from the S002-63A. The top timeline analysis (Figure 7) was constructed prior to the re-analysis of the Endicott collection of S002-63 and S002-63A.

to be much clearer and in favor of the two-machine hypothesis and – as a result – the Dalpé specimen is more likely a new Canadian perfin.

The difference from the initial timeline and the Endicott re-analysis is so clear and dramatic that it provides a profound eye-opener on how much work there remains to be done for similar perfins such as the two Lehigh Valley Coal Supply Co. perfins (L11 and L12). More importantly, it also clearly demonstrates that our studies can significantly benefit from the cooperative spirit between our cross-border colleagues and friends.

It is important to note that the issuance date of the Canadian Unitrade 108 of August 6, 1918 falls nicely within the range of the S002-63 in Figure 8 while the Unitrade 108a falls dangerously close to the start of the S002-63A. The dating of the stamp issue provides additional supporting evidence for its connection with the S002-63 and not the S002-63A as identified with the Canadian S6, and thus this provides additional support for the Dalpé specimen representing a new Canadian perfin.

It is also interesting to note that the sole S6 reported in the Canadian perfin Handbook is on a Unitrade 327 (issued in 1953) and is cancelled on August

24, 1958 from Toronto. This further suggests that the usage of the S002-63A and its Canadian cousin the S6 may have extended well past the timeline in Figure 7.

Additional evidence in favor of the two-machines hypothesis comes from the overlay of partial pattern A and B (see Figure 5) in the Dalpé perfin. As reported in the next section of this article, evidence suggests the US machine or machines was a multi-die like the 5-die Cummins Model 52 or the 10-die Model 53. Since the S002-63 and S002-63A both share the same rarity factor of E, it is expected that there should exist about the same number of each kind of perfin. This then suggests that if the S002-63 and S002-63A are simply die varieties from the same machine then that single machine should have about equal number of dies with the S002-63 pattern and the S002-63A. In other words, if the lone machine had 10-dies then about five of those dies should be the S002-63 and about five dies should be the S002-63A.

Furthermore, since there are two perfin dies in the Dalpé sample and as Figure 9 clearly shows, they are very close to being identical S002-63 patterns. This then suggests the Dalpé specimen came from a machine with only the S002-63 pattern and thus supports the two-machine hypothesis. Evidence to the contrary would be that one of the partial patterns A or B would be the S002-63A. The Dalpé specimen is of course far from an optimal sample since there is nothing to say that two side-by-side dies from the same machine could not be the same die variety (see Addendum A at the end of this paper). The evidence in Figure 9 however, clearly provides additional – albeit meager – evidence in support of the two-machine hypothesis. Put another way, this test provides no evidence to support the hypothesis of a single machine with two perfin die varieties.

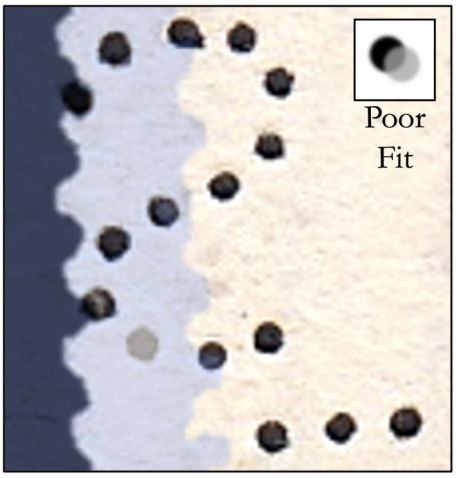


Figure 9: Perfins A and B from the Dalpé specimen overlain each other clearly showing that they are very similar in shape. A simulation of a poor fit between perfin patterns is illustrated.

Much more conclusive evidence in favor of the two-machine hypothesis was found in the US perfin collection of Steve Endicott. Three (3) pairs of stamps with two perfin patterns were found and each perfin was digitally overlain with the other in the pair. If the S002-63 and S002-63A were from the same machine and therefore were simply die varieties, then as mentioned above, there is a chance that the two different patterns would show up on a single pair of stamps. As Figure 10 clearly shows, each pair of stamps has only a single perfin pattern.

A mathematical "thought experiment" can now provide some additional and revealing evidence. If

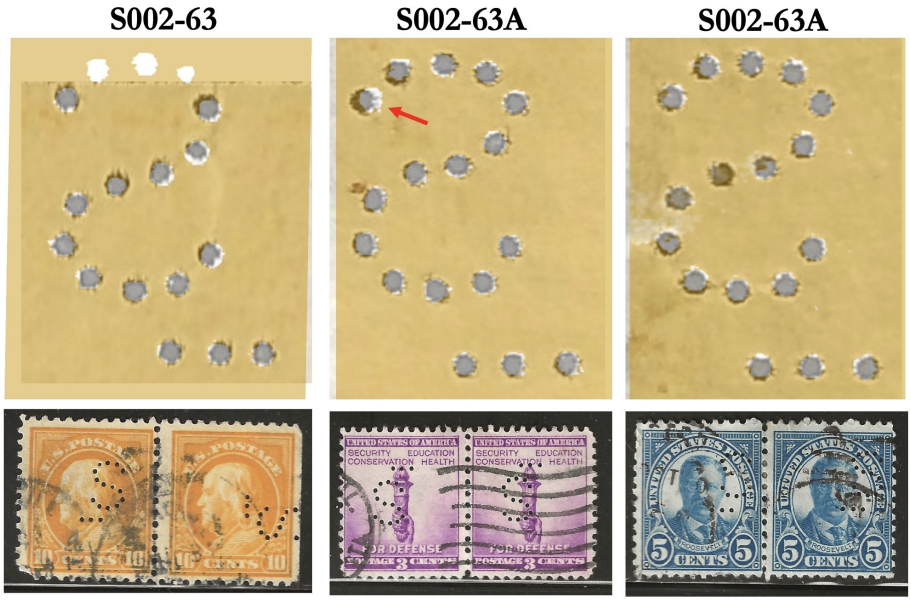


Figure 10: Three pairs of Swift & Co perfins from the Endicott collection are overlain each other to clearly show they are both the same pattern and thus providing evidence against the single-machine with two perfin die variety hypothesis. The only slightly mis-matched perforation is marked with the red arrow when most perforations are mis-matched in a similar overlay of S002-63 and S002-63A thus providing additional evidence against the single-machine with two die varieties hypothesis.

the two Swift Chicago perfins are simply die varieties from a single machine and if they are – as argued above – about equal in rarity and thus number, then what are the odds of finding a pair of perfins with only one of these perfin varieties rather than a pair of stamps with both perfin varieties? If the hypothetical perforating machine had only a two-die array (i.e., 1x2-die array) then the answer is of course "zero chance" since every pair of perfins would show both varieties. However, the most likely die array for these machines – if history is any guide – is the 1x5-die Cummins model 52 (see Chapter 3 of the current edition of the Canadian perfin Handbook [2]), since this 5-die machine appears to be the most commonly used. Using these assumptions and then applying them to both a mathematical and graphical model reveals that there would be only about a 2.56% chance of the four perfin pairs in this study showing just one perfin variety and not both. This result provides additional supporting evidence for the two-machine hypothesis. The exact mathematics of this analysis may deter many readers, so its exact methods have been moved to the back of this article in Addendum A.

From the cumulative results of the above analyses, the vast majority of the evidence appears to be in favor of the two-machine hypothesis. Put another way, there is still no evidence – other than the circumstantial evidence outlined at the end of the previous section – that the S002-63 and S002-63A are from a single machine.

Yet, there still exists a tiny shadow of a doubt, and so collectors should consult their collections and contact the authors with any evidence that may refute or support the above results (e.g., a pair of stamps with both the S002-63 and S002-63A on the same pair).

WHAT KIND OF MACHINE?

Was the machine a single or multi-die machine? The digital images supplied by Dalpé and Endicott also provide two lines of evidence for a multi-die machine. First, a line was drawn in PowerPoint across the top of pattern A and B in Figure 4. This line was then copied and pasted in order to precisely preserve its orientation. The second line was then carefully moved to the bottom of the pattern and as can be seen in Figure 4 the parallelism is very good. This suggests a multi-die machine since it is expected that multiple perfin patterns on a single stamp produced from a single die machine would be more randomly aligned with respect to each other.

The second line of evidence comes from measuring the apparent inter-die spacing *d* between the two partial patterns A and B. The pixel values for this spacing were found from the built-in app called Preview for Mac. This method is a little mathematically involved and therefore in order to not burden the reader, its exact method has also been placed in Addendum B at the end of the article.

The resulting average inter-die distance between A and B perfin patterns was found to be 21.4-mm with an estimated uncertainty of ±0.05-mm. In an unpublished survey by the author, the average inter-die spacing from a sample of 112 different Canadian perfin patterns was 20.9-mm with a range from 20.1-mm to 21.6-mm (see Figure 11).

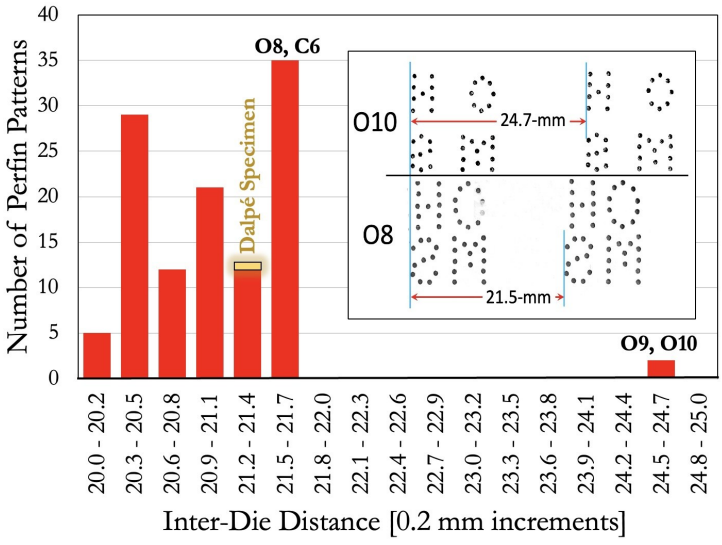


Figure 11: A graph of the frequency of inter-die distances found in the author's collection. A sample of 112 Canadian perfin patterns were found with clear inter-die distances on a single stamp. It is clear that all the machines – with the surprising exception of the two 4-hole OHMS – had spacing between 20.0 and 21.7-mm. The Dalpé specimen is marked in golden-brown. The inset diagram illustrates and thus defines the inter-die distance by showing a comparison between the O8 and O10.

A total of 11% of these surveyed perfin patterns (12 perfin patterns out of a total of 112) fell in the same ±0.1-mm range as the Dalpé specimen of 21.4 ±0.05-mm. This then clearly suggests the two partial patterns A and B are from a multi-die machine.

This same analysis was done on two scans of the pairs of S002-63A supplied by Steven Endicott. The resulting inter-die spacing was found to be 21.3-mm – a close match with the Dalpé specimen. Although it should be noted that the Dalpé and Endicott flatbed scanners have not been calibrated so the final statistical uncertainty in these inter-die distances is ... uncertain! Nonetheless, the results from the Endicott samples are consistent with a multi-die ma-

chine and also with the two machines being manufactured using the same process and thus possibly the same company (Cummins?).

Therefore, the combined evidence from the parallelism, and the inter-die spacing clearly suggests that the Dalpé and Endicott perfins were from a multi-die perforating machine.

CONCLUSIONS

The digital image analysis clearly suggests the Dalpé perfin is a closer match to the US S002-63 and not the Canadian S6 proof image in the Handbook or the S002-63A. Specimen scans provided by Steve Endicott further suggest that the Dalpé specimen is a new Canadian pattern since the American S002-63 and S002-63A perfins appear to originate from two different machines. Timeline analysis of the Canadian and the US perfins provides further supporting evidence for the connection between the Dalpé specimen and the US S002-63 pattern and supports the two-machine hypothesis rather than the single-machine die variety hypothesis for the S002-63 and S002-63A. Mathematical modeling and data from the paired samples in this study further support the two-machine hypothesis and thus the conclusion that the Dalpé specimen is a new Canadian perfin.

Measurements of the Dalpé and Endicott specimens provides significant evidence that this perfin was produced by a multi-die machine like the Cummins Model 52 or 53.

Some readers may feel that the depth of this investigation has been unnecessary and excessive. To justify this, a summary of the original reasons may be helpful. If a perfin has a distinct resemblance to another (i.e., the Dalpé specimen versus the S6) then it also has the distinct possibility of simply being a die variety of that already identified perfin. Therefore, to determine if that specimen is truly a brand-new pattern, then there must be an extraordinary amount of carefully measured and carefully argued evidence to eliminate the alternative hypothesis. “Extraordinary claims require extraordinary evidence.”[1]. Besides, this was a whooping bit of fun!

It should also be emphasized that this investigation and its conclusions were made possible by the friendly cooperation and collaboration of American and Canadian perfin researchers.

ACKNOWLEDGEMENTS

Once again, this was a team effort and the results would not be as conclusive if not for the efforts of our peer review team and especially Jim Graham.

ADDENDUM A

LIKE VS. UNLIKE PERFINS VARIETY PAIRS FROM A 5 -DIE MACHINE

What follows is a mathematical model of the frequency of occurrence of die variety pairs coming from a single perforating machine. This model was predicated on a number of rational assumptions.

First, if the S002-63 and S002-63A perfins have similar rarity factors, this assumption suggests that if the two were die varieties, then there should be about equal numbers of each variety in the die array of the perforating machine. *A pair of joined stamps with one perfin on each stamp, BUT each perfin is a different die variety (e.g., one is a S002-63 while the other is a S002-63A)*".

Second, if the Canadian survey of perforating machines contained in Chapter 3 of the Handbook is reasonable guide to the frequency of Cummins models used by companies, then the most likely machine for both the S002-63 and the S002-63A is a 5-die Cummins model 52 (i.e., there are more than three times as many 5-die machines reported or suspected for every confirmed 10-die machine).

Putting these two rational assumptions together implies that a reasonable hypothesis would be that the machine is most likely a 5-die and there should be about an equal number of the two hypothetical die varieties (i.e., S002-63 and S002-63A). One cannot divide two into five without a remainder however, so the likely scenario would be two dies of one variety (i.e., either S002-63 or S002-63A) and three of the other.

The next step in the analysis is to calculate the number and order of the permutations of this arrangement of perfin die-varieties in a single 5-die machine. For example, if we denote the S002-63 as “A” and the S002-63A as “B” then one possible permutation of the 5-die array would be AAABB. Now, how many permutations in total would there be? The solution to this is

found in the mathematical realm of combinatorics. Here the number of non-repeating permutations ***P*** is found from this formula (A.1):

$$P = \frac{N!}{n_1! \times n_2!} \qquad \text{(A.1)}$$

where ***N*** is the total number of dies (i.e., five for the Cummins model 52), while n_1 and n_2 are the number of dies for each perfin variety (e.g., say two for S002-63 and three for S002-63A). This formula is known as a "non-repeating" permutation formula, since in a group such as AAABB if the first A and the second A is switched it is not counted as a separate permutation. This holds true in our perfin variety model since it is naturally assumed that one could not tell any difference between two like perfins (e.g., between a pair of stamps both with S002-63). The exclamation mark symbol (i.e., !) means "factorial" and is a multiplication of an integer by all integers less than itself. For example,

$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120 \qquad \text{(A.2)}$$

Placing the values of *N* (i.e., 5) and *n* (i.e., 2 and 3) into equation (A.1) gives a total number of non-repeating permutations of such a 5-die machine as 10.

The next step in the process was to graphically assemble all 10 permutations then count the number of like pairs (i.e., AA or BB) versus unlike pairs (i.e., AB or BA) in each of these 10 permutations. For example, in the 5-die permutation AAABB there are three like pairs and only one unlike pair. This means that for this hypothetical arrangement of the two perfin varieties the die arrangement in a 5-die Cummins machine with S002-63 as "A" would be as follows: S002-63, S002-63, S002-63, S002-63A, and S002-63A.

In order to visually count the total number of "like" and "unlike" pairings a graphical model from these 10 permutations was constructed in PowerPoint (see Figure A.1). Here 50% transparent pairs of Admiral stamps (Unitrade 104 and 106) were overlaid upon each "like" pairs (e.g., AA or BB) and "unlike" pairs (e.g., AB or BA).

The results of this analysis were surprising. The total number of like pairs was 16 while the total number of unlike pairs was 24 – a ratio of two to three (i.e., 2:3). Another way of expressing this result is that there should be a 2/5 or 40% probability (i.e., 16 like pairs divided by the total pairs of 40 which is 16+24) of finding a "like" pairing on a single pair of perfins from our hypothetical single 5-die machine with two die varieties.

Therefore, if the S002-63 and S002-63A were simply die varieties from a single 5-die machine with two of one variety and three of the other, then if one found four pairs of those perfins – as was done in this investigation – then the chances of finding that all four had only one kind of perfins on the same pair would be

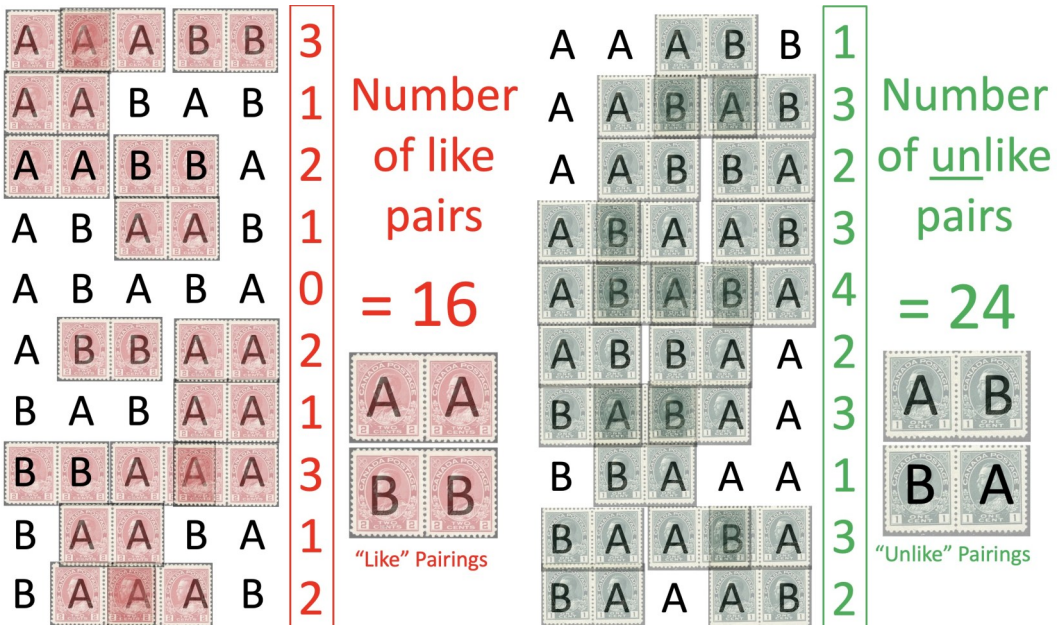


Figure 11: All non-repeating permutations of a 5-die perforating machine with two die varieties where there are two of one variety and three of the other (e.g., AAABB). The pink and green rectangles represent pairs of stamps and are images pairs of Unitrade 104 and 106 stamps turned 50% transparent. Where the colours are more saturated two stamps from different pairs are overlapping. The pair count for like and unlike pairs from each permutation appears to the right of each 5-die row.

equal to the above mentioned probability (i.e., 2/5 or 0.4) multiplied by itself four times (i.e., raised to the power of 4) which equals 0.0256, or only a 2.56% chance of this occurring. If instead, one considers a 10-die machine then assuming the same rarity factors for the two perfins, then the "like" to "unlike" pair ratio would simply be 1:1 – five dies of one variety and five of the other – and therefore, the chances of finding four "like" pairs is ½ raised to the power of four, or 1/16 which is equal to 6.25%. This result for the 10-die machine is still rather long-odds.

Thus the mathematical and graphic model presented here adds good evidence in support of the two-machine hypothesis for the S002-63 and S002-63A and, more importantly, adds compelling evidence in support of the Dalpé scans being a new Canadian perfin pattern.

It should be noted, that after the first draft of this article was completed more reports of pairs and multiples from American perfin collectors were received by Endicott. Each of these reports showed only one kind of perfin and not both, thus further supporting the two-machine hypothesis.

ADDENDUM B

PIXELS TO MILLIMETERS

The estimate of the inter-die distance *d* from the Dalpé scans was achieved through a two-step method. The first step was finding the distance in pixels between the same perforation in the partial patterns A and B in Figure 1 and 2. As can be seen in Figure 1 and 2 the stamp was put through the perforating machine slantwise. Therefore, the x-y pixel distances between the same perfin perforations of A and B needed to be converted to an inter-die distance by solving for *d* (pixels) using the Pythagorean theorem where *x* and *y* are in pixels (see Figure B.1 below) :

$$d(pixels) = \sqrt{x^2 + y^2}$$

and were measured using Preview for Mac. To improve on the accuracy of this method, this process was then repeated for three different perforations and the three values were then averaged. It should be noted here that there are other software and online applications (e.g., ImageJ.JS) that can measure *d* directly without the user doing the math. However, the author has found many of these to be awkward to use and thus prone to possible errors.

The second step was to convert these inter-die pixel distances into millimeters. The author did not have access to the Dalpé scanner for calibration, an indirect method of calculation was required. Here the height of the inked area of the stamp (i.e., 21.5-mm [5]) was used as a scaling ruler to convert the pixel measurements from the scan into properly scaled millimeters. The inter-die distance *d* in millimeters between the two perfin patterns A and B was estimated by solving an equation made of two equal ratios. The first ratio is that between the height of the inked area of the stamp (i.e., H, or 21.5-mm) over the pixel value of this same distance H. The second ratio is of the inter-die distance *d* in millimeter over the same inter-die distance in pixels as found above. These two ratios are equal and therefore the equation (B.2) appears as:

$$\frac{d(mm)}{d(pixels)} = \frac{H(mm)}{H(pixels)}$$

Rearranging equation (B.2) in order to solve for the inter-die distance in millimeters *d*(mm) gives equation B.3:

$$d(mm) = \frac{d(pixels) \times H(mm)}{H(pixels)}$$

For example, if *d*(pixels) is 955 pixels, *H*(mm) is 21.5-mm and *H*(pixels) is 958 pixels, then putting these values into equation (B.3) produces an inter-die distance *d*(mm) of 21.4-mm.

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2025 FINANCIAL REPORT

BNAPS Perfin Study Group				
2025 Expenses Summary				
Liabilities in Canadian Dollars				
Funds Balance in UD Dollars				
Opening Bank Balance	$2,877.81			
	Payee	**Cheque #**	**Date**	**Amount**
Newsletter Printing #173	Jim Graham			**$15.00**
Newsletter Printing #174	Jim Graham			**$20.00**
Newsletter Printing #175	Jim Graham			**$20.00**
Total Canadian $$				**$55.00**
Total in US $$ (.73)				$39.94
Balance Net of Liabilities @ current exchange	-$39.94			
Balance of December 31st, 2025	$2,837.87			

SUN LIFE S22 DIE CONFIRMATION PROJECT

Now that Tremblay's original S22 die proofs are in-hand we have the opportunity to do what he did not i.e. collectively we could reach a consensus on the characteristics of each of the individual dies that make it unique from the all the others. This "mapping" would then be included in Addendum I of our Handbook.

We can begin this project with the S22's that I have in hand. I have a sufficient number of S22's that are purported to be from each of Halifax, Saint John, Quebec City, Trois Rivieres and Sherbrooke.

This project is of course voluntary and I do not want to fill your inboxes with unwanted email. If you are interested in participating please contact me.

Jim Graham

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