

Declaration of Dominic M. DeMarco

**I. INTRODUCTION**

1. My name is Dominic M. DeMarco of Arlington, Virginia.
2. I am a registered US Patent Agent (#49,015) with a Bachelor of Science Degree in Chemical Engineering from the University of Virginia.
3. I have been working full time as a professional patent searcher since 1997 and have performed and/or reviewed over 10,000 patent searches across a full range of mechanical, medical, electrical, and chemical art areas.
4. I am the Managing Director of DeMarco Intellectual Property, LLC (“DeMarcoIP”), a patent search company I founded in 2007. DeMarcoIP currently employs six full-time patent searchers who work under my supervision. The majority of the team are registered patent agents—with over ten years of patent search experience—authorized to practice before the United States Patent and Trademark Off (“USPTO”). As the Managing Director of DeMarcoIP, I have trained a score of employees (current and past) on how to properly and efficiently perform professional patent searches.

- [REDACTED]
5. I was the first engineer to serve on the Board of Directors of the Patent Information Users Group (“PIUG”), which is an international society for individuals having a professional, scientific or technical interest in patent information. I am currently a lead instructor for the PIUG Fundamentals of Patent Searching course, the PIUG Freedom-to-Operate Searching course, and the PIUG Best Practices for Validity Searching course.
  6. I have taught patent search classes on behalf of the USPTO and World Intellectual Property Organization (“WIPO”). I have provided instruction on patent searching to several thousand examiners and patent information professionals working for the USPTO and WIPO. I have also served as an invited speaker at numerous patent conferences around the world.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

9. DeMarcoIP is being compensated for our time working on preparing my declaration detailing the search process we used for the Project.

## **II. SEARCH METHODOLOGIES**

10. DeMarcoIP conducts searches using the methodologies espoused by the European Patent Office (“EPO”) and by well-regarded professionals in industry. Our approach differs from the methodology typically employed in U.S. patent examination. We apply a 5W analysis (who, what, when, where, and why) to the technological innovation, considering the problem, the solution, and the technical space in which these problems and potential solutions exist.
11. It is my understanding that the USPTO trains examiners to apply a “broad-to-narrow” search methodology. This method is valid, does work, and can find relevant art. Decades of practice have shown this to be true. However,

our review of hundreds of examiner search histories and discussion with numerous U.S. patent examiners indicate that actual search method applied by the U.S. patent examiners can vary and are sometimes inconsistent across different technology centers and art units. While, some experienced U.S. patent examiners do apply alternative techniques, such as the EPO's "narrow-to-broad" technique, it is my understanding that the USPTO continues to train new examiners with emphasis on the "broad-to-narrow" concept, which may not be suitable for prior art searches in all types of technology areas.

12. Here at DeMarcoIP, one of the main reasons we do not use the "broad to narrow" search methodology is because we do not find it to most efficiently identify the best prior art. Just like an examiner with a busy docket, time is of the essence. Just as important as identifying the right piece of prior art for our clients is identifying that art efficiently and on a deadline.
13. One example of the USPTO's "broad-to-narrow" methodology is the creation of extensive synonym lists at the beginning of a search (thus engendering the term broad of "broad-to-narrow"). While there is a time and a place for using a thesaurus to create a large synonym list, it is more

effective towards the end of a search effort or when doing final, wide-ranging, “Hail Mary” type queries. The creation of these lists is generally considered the provenance of an examiner, searcher, or manager who seeks to ensure that a search captures all possible relevant terms within a given field.

14. A DeMarcoIP professional patent searcher, similar to an EPO examiner, understands that not all terms are created equal. In the “narrow-to-broad” methodology, a searcher or examiner begins with just a few well-chosen key words and/or subclasses. The process typically starts with the single best term of art used by industry experts, and any classification subclass specific to the underlying problem or solution. Only after these targeted, “narrow”, areas have been reviewed, does the search expand to broader terms or additional classifications.
15. A professional patent searcher at DeMarcoIP does not create a search strategy in the first hour and then merely execute it for the remainder of the allotted searching time. Instead, in applying this “narrow to broad” methodology, we constantly learn, adapt, iterate, and use a continuous feedback loop during the search query development process. This allows the prior art to teach us about the evolution of a technology space, enables

- us to learn about the morphing of terminology, and we strive to follow leads as the art presents them to our careful eyes.
16. We also carefully review the specification and the claims looking for the “story” behind everything. This includes identifying the problem that has engendered this inventive concept, analyzing the solution to the problem, determining where and when the solution is being executed, and exploring what others do to solve this problem and what other technical spaces this problem or solution exist. While all answers may not be apparent in the first hour, our process of continual learning, adaptation, and iteration enables us to conduct highly effective and comprehensive prior art searches.
17. The three best papers documenting this narrow to broad methodology and implementation were authored by Evert Nijhof, a lead patent searcher with the Dutch semiconductor manufacturer ASML. An additional fourth paper of high relevance on the subject is authored by EPO trainer, Ricardo Oltra-Garcia.
- Nijhof, Evert - “*Subject analysis and search strategies*” - <https://doi.org/10.1016/j.wpi.2006.07.013>
- Nijhof, Evert - “*Searching? Or actually trying to find something?*” -

[REDACTED]

<https://doi.org/10.1016/j.wpi.2011.06.007>

Nijhof, Evert - *“Want to find? Break the rules!”* -

<https://doi.org/10.1016/j.wpi.2018.02.003>

Oltra-Garcia, Ricardo - *“Efficient situation specific and adaptive search strategies”* - <https://doi.org/10.1016/j.wpi.2011.11.004>

### III. SEARCH SPECIFICS

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

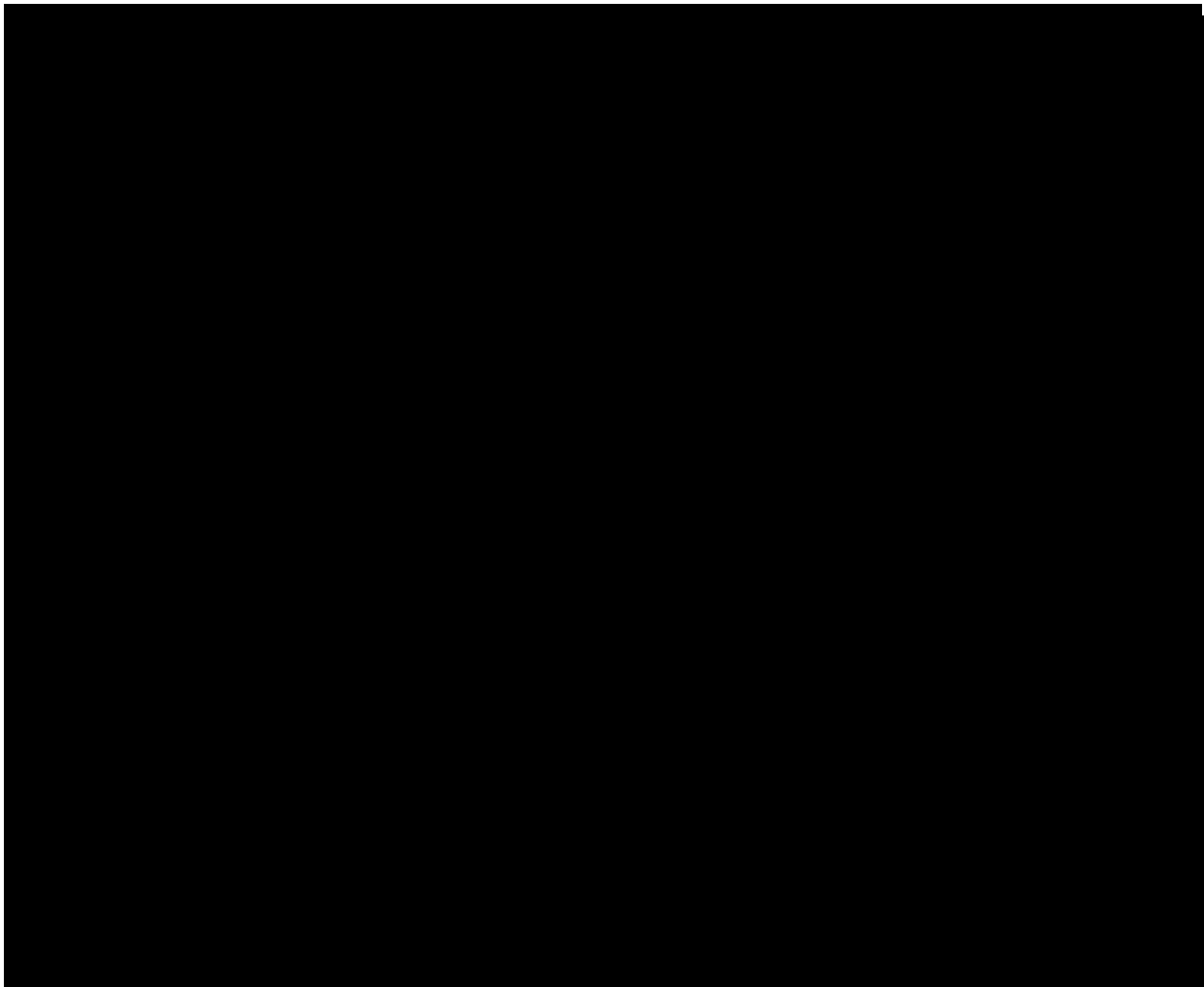
[REDACTED]

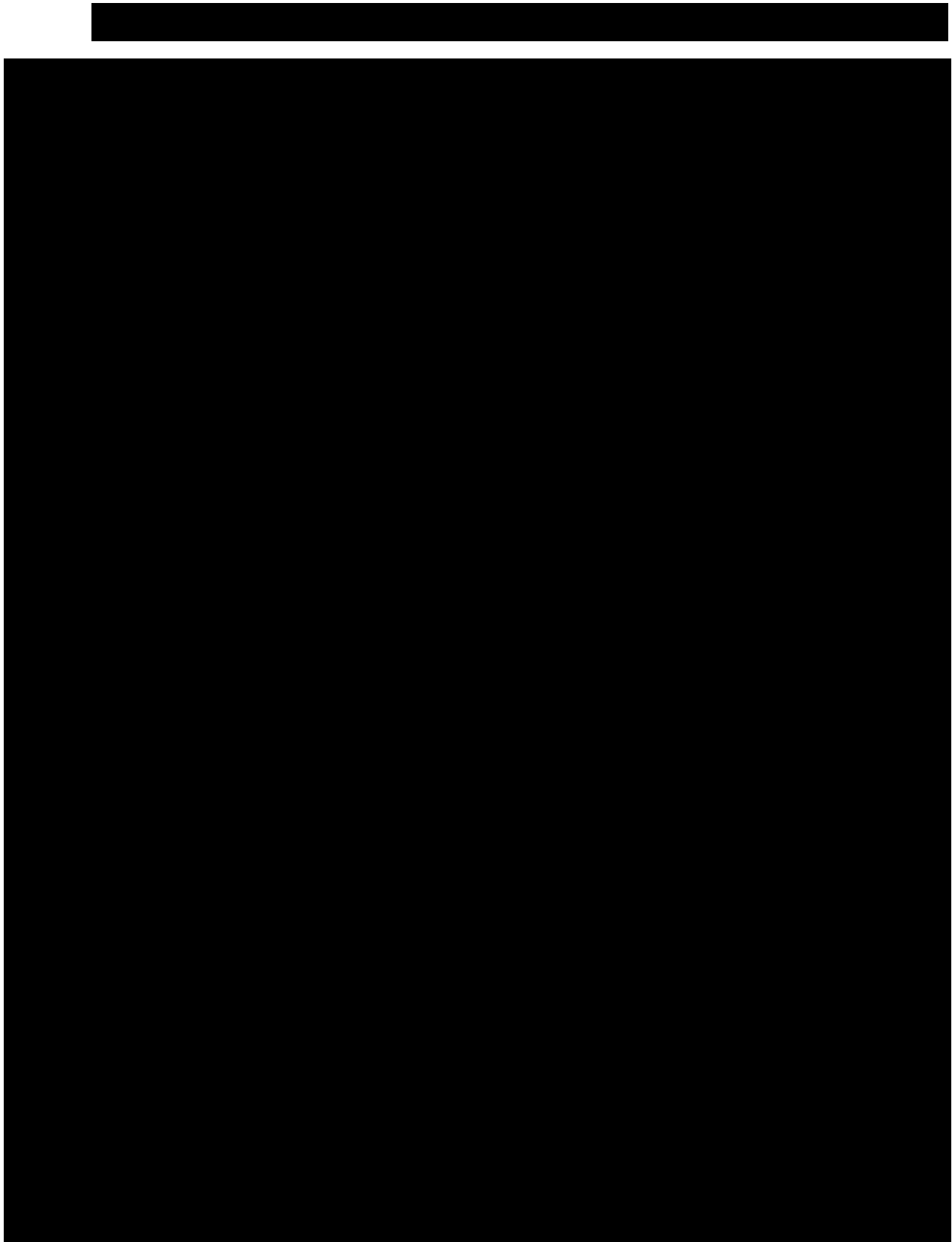
19. Each query is built slowly in small incremental steps. At all times, a professional patent searcher evaluates what is the best use of the next 20, 30, or 60 minutes of my time, and of all the strategies that could be applied, which is the most efficient in locating potentially relevant prior art.
20. We have an extensive knowledge base built from having worked with patents for the length of our careers. This knowledge base influences our starting queries and initial forays into locating prior art, but a DeMarcoIP



professional patent searcher also thinks outside the normal comfort zones and applies a growth mindset to enable the learning, adapting, and iterating required of the profession. This means that each and every search develops in the specific and unique manner the matter requires.

21. This approach is reflected in the following example from one of the queries the DeMarcoIP team ran for this particular search effort:





- [REDACTED]
- [REDACTED]
22. The key to this process is understanding that no single query is the best, ultimate, or “one query that will find all the art and eliminate the need for any other queries.” Instead, a DeMarcoIP professional patent searcher will build a full array of queries that attack the situation from multiple angles and viewpoints.
  23. This process is well documented within a paper by Howard Homan, a former lead patent searcher at ExxonMobil. Homan, Howard S. - “*Making the Case for Patent Searchers?*” - <https://www.infoday.com/searcher/mar04/homan.shtml>.
  24. The same methodology that was used to create the [REDACTED] documented above is executed for each and every search technique, all the while accumulating knowledge about key terms, Classification codes of relevance, potential Assignees and Inventors to investigate, and tagging relevant references upon which to perform citation analysis. Based on prior work experience in the medical device space, the crossing of classification codes with text is likely the most effective means of locating prior art of

[REDACTED]

potential relevance. However, Citation-based searching, Assignee based searching, Inventor based searching, Text based searching independent of Classification, Non-Patent Literature (NPL) based searching, and automated AI / Machine Learning / Semantic Analysis tools are all valid means of reviewing potential prior art and should all be considered.

25. Another key aspect of the iterative process exemplified by the Table above is the identification of queries as reviewed. Many times, in our review of examiner search histories, it is very difficult to determine what art has actually been reviewed versus what is merely an exploratory query step. This is very important for quality review both internally within an organization and externally for review by others. This matter was discussed in detail by the author at a public PIUG meeting in 2011, paper below.

DeMarco, Dominic M. – “*Plumbing the Depths of Examiner Search (il)-Logic*” - <https://demarcoip.wpenginepowered.com/wp-content/uploads/2025/11/DeMarcoIP-2011-Examiner-Search-Logic.pdf>.

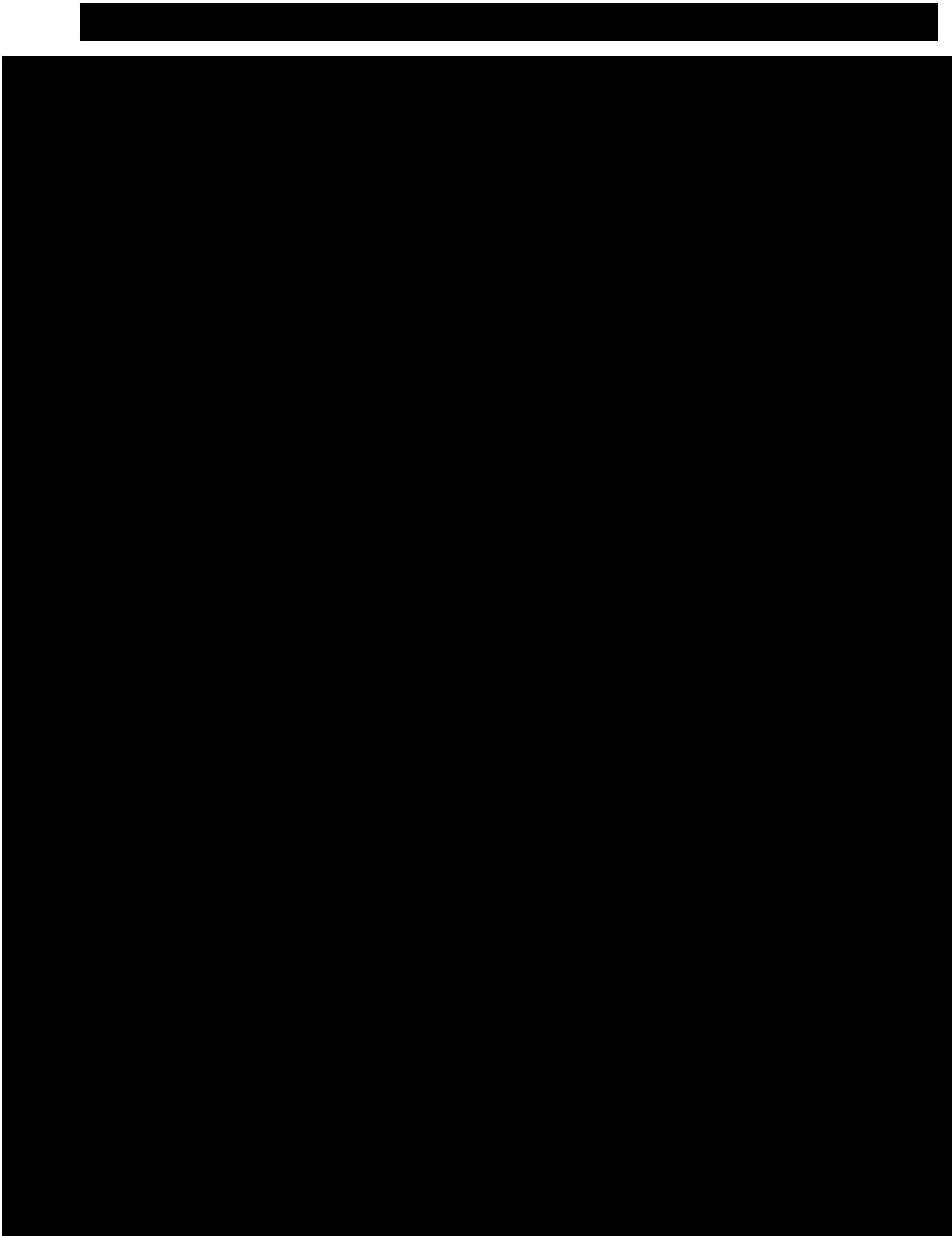
26. The table below details [REDACTED]
- [REDACTED]
- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Each of these queries was built up in the manner detailed above and only the final step in the process is documented for clarity purposes.

[REDACTED]



[REDACTED]

#### IV. CONCLUSION

27. Using our methodology, we successfully identified strong prior art references that counsel for Terumo relied upon in its nine IPR and PGR proceedings for the Patents, as shown in the table below.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]


[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

30. While crafting a search strategy ends up being unique for every professional patent searcher or examiner, the fact that multiple search queries developed by the DeMarcoIP team crafted for this case find each and every reference, multiple times, is evidence that the properly executed “narrow-to-broad” search was highly effective in identifying the strong prior art references.
31. The foregoing discloses all information relevant to DeMarco IP’s search methodology for this Project.
32. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

/s/   
Dominic M. DeMarco