EXPERT DECLARATION OF MARK COHEN IN IPR2023-00521

I. BACKGROUND AND QUALIFICATIONS

1. I have been asked by counsel to Terves, LLC ("Terves") to opine on the application of criteria set forth in 35 USC Sec. 316(b) to initiating of an Inter Partes Review ("IPR") in the matter of *Chongqing Yanmei Technology Co., LTD. [sic] v. Terves, LLC*, IPR2023-00521 (Jan. 24, 2023), or as may be better translated into English: "Chongqing Magnesium Research Technology Ltd. v. Terves, LLC."[1] (the "IPR," filed by "CMRTL"), namely to "consider the effect … on the economy, [and] the integrity of the patent system …." This opinion focuses on three aspects of the effect on the US economy: the adverse impact of initiating this IPR on the economy considering international trade rules and the likely relationship of this IPR with Chinese industrial policy, as well as the possibility that this litigation may be a proxy litigation in which the real party in interest may not be disclosed. It thereafter considers the related issue of the impact of initiation of this IPR on the integrity of the US patent system.

[1] Unless otherwise indicated, all translations are my own. To the extent that this identification of the company is in error, I reserve the right to make additional modifications to this statement. The above information is based on the romanized form of the petitioner's Chinese name. I assume that the Chinese name is 重庆研镁科技有限公司. However, this name is not provided in counsel's Petition for Inter Partes Review (Jan. 24, 2022) (the "Petition"). According to the Petition, the company's legal representative and largest shareholder is Mr. Huang Guangsheng. I believe the Chinese name is 黄光胜. The Petition also identifies petitioner's address at No. 1 Building, Guojichuangkegang, No. 130, Xiazhongdukou, Shapingba District Chongqing, China. I believe this romanized name corresponds to 重庆市沙坪坝区下中渡口130号国际创客港园区第1号楼. As the Chinese language is a tonal language with numerous homonyms corresponding to different Chinese characters, it can often be difficult to ascertain the correctly "spelled" Chinese name. As discussed in further detail, identification of the proper company and individuals can assist in determining what the real parties in interest in a litigation might be. I believe the number of the company as registered with the State Administration for Industry and Commerce (akin to the corporate registry of China) is 500106000088261. Further specificity regarding the name of the Petitioner would be helpful in identifying it, understanding its interests in this proceeding, and verifying the accuracy of any information provided by Petitioner. Petitioner's counsel, the Bayramoglu law firm has a large office in China, with 40 attorneys at an unidentified address and operating under an unidentified Chinese name. If counsel has these resources, it should be able to provide this and other relevant information. See https://bayramoglu-legal.com/team/ (last viewed May 27, 2023).

As is pointed out in further detail below, based on available evidence and statutory considerations, I do not believe it is in the public interest or the interest of the USPTO for this matter to be accepted by the USPTO. Apart from these considerations, I take no position on issues concerning validity of the subject patent.

2. My billing rate for this matter is $750.00 per hour. My curriculum vitae is attached (Ex. 2002).

3. I currently serve as a Distinguished Senior Fellow, Lecturer, and Director of the Berkeley Center for Law and Technology, Asia IP Project where my principal focus is on Chinese intellectual property law. I teach the only comprehensive Chinese intellectual property law course offered at any law school in the United States. In addition to my position at Berkeley Law, I am a non-resident fellow or scholar at such institutions as: the University of California San Diego, the National Bureau of Asian Research, the Hinrich Foundation and the Sunwater Foundation. I was formerly a Visiting Professor and an Adjunct Professor at Fordham Law School. I am also a Guest Professor at Renmin University Law School, Beijing, China. I have guest lectured before dozens of universities throughout the world, including at Chongqing University, where I have a reasonable basis to believe the legal representative of the Petitioner in this proceeding is a professor. I have also trained US government officials on Chinese legal and intellectual property matters, and testified several times on Chinese IP and trade matters before Congress, including three times during the first six months of 2023. I am the author of several books and articles on Chinese intellectual property and trade law in both English and Chinese and I maintain a well-regarded blog, www.chinaipr.com. While this expert opinion is not submitted in my capacity as an attorney

practicing US domestic law, but rather as an expert in Chinese law, I am, however, a member in good standing of the Bar of the District of Columbia.

4. I hold a B.A. in Chinese Studies (SUNY Albany), an M.A. in Chinese Literature (University of Wisconsin), and a J.D. from Columbia Law School. I was formerly an exchange student at Nanyang University in the Republic of Singapore. I have been tested by the State Department at near native fluency in my ability to read and speak Chinese.
5. I have served twice with the USPTO for a total of 13 years. During my tenure at the USPTO, I served in Washington, DC as an Attorney-Advisor on Chinese IP law (2001-2004), as the first USPTO representative in China (2004-2008), and as chair of the US Embassy's Intellectual Property Task Force, 2004-2008. I also served as the Senior Advisor to the Director of the USPTO on China Affairs and Senior Counsel, China at the USPTO (2012-2018).
6. I am a recipient of several awards for my work on Chinese IP, including the Meritorious Honor Award from the President of the United States, and a Gold Medal Award from the Secretary of Commerce for work on advancing rule of law in China through intellectual property. I have also received awards from the US Chamber of Commerce, the National Law Journal, and PhRMA for my work on Chinese IP matters.
7. This statement is divided into three sections: (a) the impact on the economy in failing to consider US trade policies, Chinese **industrial policies** and proxy litigation strategies by initiating this IPR; (b) the impact on the "the integrity of the patent system" of allowing an IPR to proceed in a technology that is the subject of aggressive Chinese non-market interventions; and (c) the impact on the economy of failing to consider Chinese **industrial**

policies that provide advantages to Chinese small and medium enterprises (SMEs), and disadvantages to US SME's in China (such as Terves).

8. My arguments are based on United States government laws and regulations, Presidential Executive Orders related to CMRTL's activities, as well as legal disputes in the United States in the magnesium and non-ferrous metals industries, and other sectors. My evaluation is also based on such public information as I was able to obtain concerning Chinese industrial policies in Terves' industrial sector, as well as public sources regarding the identity of the Petitioner and its legal representative and their interests in this proceeding.

9. In light of the concerns that I have identified herein, I believe that disputes over the validity of the patent in suit are best resolved in an Article III US Court. An Article III court is a viable, independent forum that is eminently capable of addressing the validity issues raised by Petitioner. It also has the authority to address any other newly arising issues. An Article III court can also additionally conduct any necessary discovery concerning the real part(ies) in interest in this proceeding, including utilization of letters rogatory and other forms of international judicial assistance. An Article III court can also levy penalties for non-compliance with any additional discovery, including adverse inferences, sanctions or contempt proceedings.

II. INITIATING THE IPR WOULD CONTRAVENE PRESIDENTIAL EXECUTIVE ORDERS DECLARING A NATIONAL EMERGENCY, TO SUPPORT CHINESE INDUSTRIAL POLICIES THAT TARGET US TECHNOLOGY COMPANIES AND ADVERSELY AFFECT THE U.S. ECONOMY AND INTEGRITY OF THE US PATENT SYSTEM

10. Chinese industrial policies implicate two legs of 35 USC Sec. 316(b), namely, "the effect … on the economy" and the "integrity of the patent system." I have identified these policies

by their general reference to the type of technologies disclosed by the patent in suit, US 10,689,740 B2 (2014) (the "'740 patent "), particularly in light of the current "National Emergency" over US critical magnesium processing capacity and continuing threats to the US economy by reason of China's plans to further develop the magnesium industrial sector.

A. Background to Terves and the '740 patent

11. The '740 patent discloses a "dissolvable magnesium alloy" (claim 1), a "v magnesium composite that at least partially forms a ball, a frac ball, a tube, a plug or other tool component that is to be used in a well drilling or completing operation" (claim 2), and a "dissolvable magnesium cast composite" (claims 19, 94). Exemplary environments where the invention may dissolve are "salt water, brine, [and] fracking liquids." (5:59). Embodiments of the alloy are suited for use to make "a ball or other tool component in a well drilling or completion operation such as, but not limited to, a component that is seated in a hydraulic operation that can be dissolved away after use so that no drilling or removal of the component is necessary." (2:19-24).

12. I am informed that Terves is active in numerous magnesium finished product markets, including the market for frack ball and other oil and gas tool components. Terves commercializes this invention so that such items are dissolvable. I am informed that this dissolvability provides commercial advantages for oil and gas operator / customers of Terves.

13. I am informed that Terves manufactures commercial embodiments of the invention within the first United States facility built in the past 50 years for the secondary processing of magnesium. Through its various market-oriented commercial activities, Terves provides

critical products that are necessity for the integrity of a number of US supply chains. It exemplifies the kind of entity within the domestic industry for critical minerals that United States economic, international trade and national security policy are supposed to support.

B. Executive Orders and US Trade Policy

14. On December 20, 2017, President Trump signed Executive Order 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals." (Ex. 2003) . This directed the Secretary of the Interior to identify critical minerals, and made it the policy of the United States government to "reduce the Nation's vulnerability to disruptions in the supply of critical minerals." Among the thirty-five (35) minerals identified by the Secretary of the Interior as "vulnerable to disruption" under directives of that Order, and serving "an essential function in the manufacturing of a product, the absence of which would have significant consequences for our economy and our national security," was **magnesium**. (All bold emphases in the texts quoted in this section are my own).

15. On September 30, 2020, President Trump signed Executive Order 13953, "Addressing the Threat to the Domestic Supply Chain from Reliance on Critical Minerals from Foreign Adversaries and Supporting the Domestic Mining and Processing Industries." (Ex. 2004). On February 24, 2021, President Biden continued EO13953, through invocation and signature of Executive Order 14017, requiring various reports from agencies about supply chain preparedness. (Ex. 2005). It has been noted that "E.O. 13817 and 13953 were two of the few Biden did not immediately rescind."[2]

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[2]In addition to the Executive Orders themselves, additional references are: https://www.perkinscoie.com/en/news-insights/biden-administration-secures-supply-chains-of-strategic-and-

16. EO13953 invoked the National Emergencies Act, 50 U.S.C. 1601 *et seq.*, as well as the International Emergency Economic Powers Act, 50 U.S.C. 1701 *et seq.*, to declare a National Emergency and obligate all federal agencies in various ways to support the United States' critical minerals policy. EO13953 on its face covers efforts to protect not only domestic mining, but also domestic **processing** of critical minerals, such as **magnesium**.
17. Describing "the aggressive economic practices of certain non-market foreign producers of critical minerals" as having "destroyed vital mining and manufacturing jobs in the United States," EO13953 cited a need to "reduce our vulnerability to adverse foreign government action, natural disaster, or other supply disruptions," consistent with needs of United States "national security, foreign policy and economy" to have a "consistent supply of each of these [critical] minerals."
18. EO13953 specifically cited an example of one particular mineral whose "imports come from China" and "is of critical importance to the hydraulic fracturing ('fracking') industry, which is vital to the energy independence of the United States." Thus fracking (and its tools) is an industry subject to the policy statements within EO13953. This makes sense, given the importance to national security of the domestic energy industry.
19. EO13953 states that "the United States must broadly enhance its mining and **processing** capacity," and because of "undue reliance on critical minerals, in **processed** or unprocessed

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critical-minerals-for-clean-energy-economy.html; and https://www.iea.org/policies/15532-executive-order-13953-addressing-the-threat-to-the-domestic-supply-chain-from-reliance-on-critical-minerals-from-foreign-adversaries-and-supporting-the-domestic-mining-and-processing-industries (noting EO13953 is still "in force" as of Oct. 31, 2022).

form, from foreign adversaries," the President declared "a national emergency to deal with the threat."

20. Much of EO13953 describes various reports due to the President to address the National Emergency, with a notable exception of Section 2 which imposes affirmative duties on agencies:

> Sec. 2. (a) It is the policy of the United States that relevant agencies should, as appropriate and consistent with applicable law, prioritize the expansion and **protection** of the domestic supply chain for minerals and the establishment of secure critical minerals supply chains, and **should direct agency resources to this purpose**, such that:
> (i) the United States develops secure critical minerals supply chains that do not depend on resources or processing from foreign adversaries;
> (ii) the United States establishes, expands, and **strengthens** commercially viable critical minerals mining and minerals **processing** capabilities; and
> (iii) the United States **develops** globally competitive, substantial, and resilient domestic commercial supply chain capabilities for critical minerals mining and **processing**.

21. On its face, therefore, EO13953 names "protection" of the "domestic supply chain" as United States policy, implemented through "direct[ion of] agency resources to this purpose." This includes government agency action to "strengthen[] commercially viable critical minerals . . . processing capabilities."

22. Terves' magnesium processing patent, with direct applications and utility in the fracking industry (which is "vital to the energy independence of the United States"), that is currently commercialized by its United States-based owner, is self-evident proof that the '740 patent is of direct economic importance to the United States, US energy independence, and the supply chain in critical minerals. It is therefore subject to protections of the National Emergency that still exist under the never-rescinded EO13953.

23. Patentee's indirect role in providing critical magnesium processing capacities is also covered under EO13953. As noted, EO13953 recognized the needs of the United States to "expand

and strengthen commercially viable … **minerals processing capabilities**" and to develop "**globally competitive, substantial and resilient domestic commercial supply chain capabilities for critical minerals** mining and **processing**." Terves' ability to continue to supply fracking caps supports such "commercially viable" and "resilient" supply chain capabilities for magnesium, including those that may arise outside of fracking caps.

C. Chinese Industrial Policies Targeting Magnesium

24. Mr. Michael Komesaroff a senior Australian mining engineer, China hand, and observer of China's extractive industries has long documented the destructive effect of China's industrial policy (including intellectual property policy) on the metals industry in the United States and elsewhere.[3] In the metals industry, according to Komesaroff, "the key to success revolves around capital management, or whether project developers can build new plants more quickly and cheaply than their competitors." Ex. 2006, Komesaroff, p.13. In the case of China, "[s]ome foreign companies seem to have enjoyed successful collaboration with [metals sector] counterparts in China only to find later that their technology has been compromised." *Id.*, p.12. A "common experience" of those who partnered with Chinese entities is the "shift in market power from the foreign technology owner to the Chinese collaborator." *Id.* One major way China advanced itself rapidly in the field was physical disassembly and reassembly of foreign plants, including Western magnesium plants. "In addition to providing the opportunity for immediate learning, China's acquisition of obsolete foreign metallurgical plants early in the Reform era was a cost-effective means of

[3] Michael Komesaroff, "Make the Foreign Serve China: How Foreign Science and Technology Helped China Dominate Global Metallurgical Industries," Project on Chinese Business and Political Economy, Working Paper No. 2, March 2017, Center for Strategic and International Studies. (Ex. 2006).

progressing up the industry knowledge curve at a time that the country's purchase of foreign goods and services was constrained by limited reserves of foreign currency." *Id.*, p.8.

25. Mr. Komesaroff has documented how Chinese efforts led to the loss of US and foreign capacity through China's acquisition of foreign magnesium plants as well as China's infringement or theft of foreign intellectual property. As a result of these strategies and others, "China's magnesium industry has grown to be the world's largest after purchasing obsolete foreign facilities." *Id.*, p.4. Over time, after such purchases, Chinese entities were able to make "impressive" efficiency improvements in the magnesium sector. *Id.*, p.12. Over the period between 2004 to 2014, "in magnesium, the rest of the world contracted while China's production grew by 37 percent." *Id.*, p.14. Chinese sector growth was supported by "copying the proprietary technology it has purchased or stolen from foreign companies," as "leadership expected that their engineers and technicians would 'study the imported technology with the purpose of copying and creating new designs for use throughout the country.'" *Id.*, p.15, quoting Hinton, "China's Steel Industry: The Policy Implications for Technology Transfer to the People's Republic of China," 16-17.

26. Komesaroff and Hinton's allegations concerning trade secret theft and IP misappropriations have been further evidenced by cyber intrusions in the United States to steal trade secrets through targeting such companies as U.S. Steel, Alcoa, United Steel Workers, and Allegheny Technologies, Inc. (a leading manufacturer of non-ferrous allows and specialty steels as well as forgings and castings). In May 2014, the United States Department of Justice announced an indictment against five 3 People's Liberation Army ("3PLA") officers for cyber intrusions

and economic espionage directed against these and other U.S. firms.[4] These five officers were assigned to 3PLA's Second Bureau, Unit 61398. Much like Terves, each of the victims operated in a metals sector that the Chinese government has prioritized for development.

27. The influence of Chinese industrial policy on has also been recognized by the United States International Trade Commission ("USITC") and US Department of Commerce ("DOC"). The USITC, an independent fact-finding and adjudicative agency involved in trade issues, recently issued its fifth antidumping review report, *Pure Magnesium from China*,[5] thereby maintaining dumping duties on pure and alloy magnesium that have been in place since 1995.[6] Additional duties have also been imposed on alloy magnesium.[7]

28. A fundamental aspect of the antidumping duties imposed upon China is that China has been recognized as a "non-market economy" country by DOC. Duties were assessed based on long-standing DOC practice that China does not operate on market factors in costs or pricing of its manufactures.[8] A statutory factor in making that determination is "the extent of government ownership or control of the means of production" (19 U.S. Code § 1677). In other words, DOC has determined that the Chinese government exercises extensive control over magnesium alloy production, whether or not the state has directly invested in it.

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[4] U.S. v. Wang Dong et al., 13-26 (W. D. Pa. May 1, 2014).
[5] Investigation No. 731-TA-696 (Fifth Review), Publication 5420 (May 2023).
[6] Magnesium from China, Russia, and Ukraine, Inv. Nos. 731-TA-696-698 (Final), USITC Pub. 2885 (May 1995).
[7] Pure Magnesium from China, Israel, and Russia, Inv. Nos. 701-TA-403 and 731-TA-895-897 (Preliminary), USITC Pub. 3376 (Dec. 2000) at 7; see also Magnesium from China and Russia, Inv. Nos. 731-TA-1071 and 1072 (Final), USITC Pub. 3763 (Apr. 2005) at 6-11 ("Magnesium 2005 Final Determination"). These investigations were also the first in which Commerce defined pure and alloy magnesium as a single class or kind of merchandise.
[8] https://www.federalregister.gov/documents/2023/04/12/2023-07624/magnesium-metal-from-the-peoples-republic-of-china-final-results-of-antidumping-duty-administrative

29. The current 141.49 percent antidumping duty[9] has had had adverse impacts on other downstream industries relying on magnesium by reducing the availability of low-cost supply. Terves participates in this adversely affected downstream market. Lower cost magnesium overseas also invites lower priced competition from countries of finished products of value-added magnesium products which are not covered by the relevant tariff schedule classifications upon which dumping duty rates on imports from China are set. Without corresponding additional finished good dumping duties on (e.g.) Chinese imports of fracking tool parts, foreign competitors can advantage themselves with less than fair value ("LTFV") prices (without anti-dumping duties) on their own cost inputs, then import into the United States such LTFV items under tariff classifications not covered by the duties and at prices that may be less than Terves' or other domestic competitors' cost of goods sold.

30. In this not uncommon scenario, the unintended consequences of an antidumping investigation are that a foreign rival, particularly one where the state controls factors of production, seeks to enter the US market at a competitive price point or until it is also the subject of an anti-dumping investigation. The new market entrant might thereafter tip the scales against a metals processing company like Terves through the imposition of costly and unnecessary litigation. Michael Komesaroff and the USITC have identified efforts to weaken US domestic competitiveness as part of a pre-market "softening" commercial strategy,

[9] 88 Fed Reg. 21974, "Magnesium Metal from the People's Republic of China: Final Results of Antidumping Administrative Review; 2021-2022" (April 13, 2023), https://www.federalregister.gov/documents/2023/04/12/2023-07624/magnesium-metal-from-the-peoples-republic-of-china-final-results-of-antidumping-duty-administrative

which may also be directed by the State. US magnesium producers are already suffering from serious material injury as determined by the USITC. Moreover, bankruptcies in the magnesium sectors caused by paradigm-shifting market conditions are commonplace. In this situation, remaining US domestic manufacturers are particularly vulnerable to the kind of "material injury" or "threat of material injury" enumerated in our antidumping law (18 USC Sec. 1677), and implicitly available to Terves and the USPTO pursuant to 35 USC Sec. 316(b) by considering "the effect … on the economy, [and] the integrity of the patent system."

31. Chinese industrial policies underscore the imminent threats being posed to Terves. Beginning in 2015, the year after the '740 patent 's earliest provisional application priority date, Chinese industrial policies took a new shift under the rubric of the "innovation-driven development strategy." Prof. Barry Naughton at the University of California San Diego, perhaps the leading US expert on Chinese industrial policies, has described this shift as "bigger, more intrusive, and more comprehensive than any previous Chinese industrial policy." These policies incorporate a "vision of a technological revolution and a substantial re-ordering of global strategic relations."[10] Other commentators have noted that these policies demonstrate a more comprehensive, "whole of society" approach that consequently imposes distortionary burdens upon US approaches that are primarily based on private rights and market principles. It is my opinion that this "whole of society" approach manifests itself in a range of areas pertinent to the IPR, including such areas as

[10] Barry Naughton, *The Rise of China's Industrial Policy, 1978-2020*, at 133, 136 (2021), https://dusselpeters.com/CECHIMEX/Naughton2021_Industrial_Policy_in_China_CECHIMEX.pdf.

patent examination, foreign trade policy, export controls, and foreign investment policy, all of which affect American interests.[11]

32. One well-known "whole of society" approach is China's 10 year "Made in China 2025" plan ("MIC2025"), which has been a continuing focus of United States concerns. According to the Office of the United States Trade Representative ("USTR"), this is a plan to "drive[]… China's goals of dominating its domestic market and becoming a global leader in a wide range of technologies, especially advanced technologies."[12] Broadly speaking, MIC 2025 is a large scale program that seeks to make China a leading edge manufacturer of a range of products. Among the 10 key technologies areas targeted by MIC 2025, four are within Terves' current core businesses: new materials; aerospace and aeronautical equipment; energy equipment; new energy and energy saving vehicles.[13] The plan was drafted by the Ministry of Industry and Information Technology and released, in outline form, by China's State Council.[14] The '740 patent in particular reads on energy equipment used in fracking, a key source of energy for the United States. Chinese industrial policy goals in this area

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[11] FBI Director Christopher Wray has stated: "[O]ne of the things we're trying to do is view the China threat as not just the whole-of-government threat, but a whole-of-society threat on their end, and I think it's going to take a whole-of-society response by us." *How China's Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World*, White House Office of Trade and Manufacturing Policy (June 2018), at p. 14, https://china.usc.edu/sites/default/files/article/attachments/white-house-china-threatens-us-intellectual-property-2018-06.pdf. For a similar view, see Scott Kennedy, Made in China 2025 (June 1, 2015), which notes that MIC2025 "will be more coordinated and utilize a wider array of policy tools" than prior industrial plans. Available at https://www.csis.org/analysis/made-china-2025.

[12] Office of the United States Trade Representative, *Findings of the Investigation into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation under Section 301 of the Trade Act of 1974* (March 22, 2018), at 7. https://ustr.gov/sites/default/files/enforcement/301Investigations/301%20Report%20Update.pdf .

[13] The remaining six areas are: new advanced information technology; automated machine tools & robotics; maritime equipment and high-tech shipping; modern rail transport equipment; agricultural equipment; and biopharma and advanced medical products. See Scott Kennedy, "Made in China 2025" (June 1, 2015), *supra*., at fn. 11.

[14] Id.

extend beyond dumping of magnesium and magnesium alloys. They likely extend to disrupting US capacity of a critical raw material, and displacing US manufacturers supply to hydraulic fracking in general. For example, Chinese supplies of forged steel fluid end blocks used in hydraulic fracking have also already been found to be subsidized by the Chinese government.[15]

33. There are other Chinese industrial plans that China has pursued that also relate to Terves' lines of business including: (a) China's Strategic Emerging Industries Development Plan (2012), which includes a focus on the "Advanced structural materials industry," with a "focus on light weight, high strength, and large specifications, vigorously developing high-strength light alloys, … and speeding up the preparation and deep processing of magnesium alloys;"[16] and (b) China's National New Energy Vehicle Industry Development Plan (2021-2035), which includes "carry[ing] out high-performance aluminum magnesium alloy, … and other key material industrial applications goals for lightweight components for electric vehicles."[17]

34. Magnesium products also have numerous defense applications, which are also less likely to be specifically enumerated in Chinese industrial policies. According to a recent report of the European Commission, magnesium products are critical in six different defense industrial sectors, including: aeronautics, naval, land, space, electronics and missiles. Magnesium is

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[15] USITC, "Fluid End Blocks from China, Germany, India and Italy" , USITC Inv. Nos. 701-TA-632-635 and 731-TA-1466 and 731-TA-1468 (Final), Pub. 5152 (Jan. 2021); https://www.usitc.gov/publications/701_731/pub5152.pdf

[16] 12th Five Year Plan, Strategic Emerging Industries Development Plan (2012),(国务院关于印发"十二五"国家战略性新兴产业发展规划的通知) "先进结构材料产业。以轻质、高强、大规格为重点，大力发展高强轻型合金，… 加快镁合金制备及深加工" (July 9, 2012) at https://www.gov.cn/zwgk/2012-07/20/content_2187770.htm/

[17] GIZ, NEV Development Plan 2035, Policy Briefing & English Translation (2021), by Sebastian Ibold, Xia Yun and Xiao Shuyue (p. 6), , available at https://transition-china.org/wp-content/uploads/2021/10/New-Energy-Vehicle-Industry-Development-Plan-2021-2035.pdf.

listed as a critical raw material for European defense purposes.[18] China also appears to be actively researching magnesium for its defense applications. Chinese journalists have described future defense applications magnesium to include "mobile and portable communication equipment, individual weapons and intelligent helmets for light weapon systems, suspended outer armor plates for military vehicles, and shells for shoulder-fired missiles and rockets."[19] The Shenyang Institute of Technology, School of Material Science and Engineering is researching magnesium alloys and forming technology in "military parts(军品配套)."[20] The Petition itself references related cases involving the '740 patent and *Yueyang Aerospace New Materials Co. Ltd* , presumably involving an aerospace parts manufacturer. Insufficient information is provided in the Petition about this company and any relationship it may have with Petitioner, Petitioner's legal representative and principal investor or their investment, related companies, contractual obligations or national defense motivations for this IPR. As pointed out in further detail in this submission, such information may be more efficiently obtained through an Article III court proceeding.

35. There are likely numerous other national, local industrial or sector-specific plans, published or unpublished, mandatory or voluntary, that focus on the application of magnesium in a range of industrial sectors. For example, in CMRTL's hometown of Chongqing, there are a number of references to China's plans to develop magnesium-related technology, including a major project in Chongqing. Magnesium appears 11 times in

[18]European Commission, Critical Raw Materials for Strategic Technologies and Sectors in the EU (2020).
[19] China Industrial Economic Information Network, "My Country Should Attach Great Importance to the Strategic Position of the Magnesium Alloy Industry", (May 27, 2020), http://www.cinic.org.cn/xw/cjfx/818664.html.
[20] Liaoning Provincial Key Laboratory of Magnesium Alloy and Its Forming Technology (辽宁省镁合金及其成形技术重点实验室) (Sept. 8, 2020), https://clxy.sut.edu.cn/info/1065/2066.htm.

the Five Year Plan of Chongqing for High-Quality Development of Manufacturing Industry (2021-20215)" which includes goals of "Giving full play to the technological advantages in the field of magnesium alloys, promote existing enterprises to accelerate the development of high-performance magnesium alloys, deformed magnesium alloys, magnesium alloy forgings, corrosion-resistant magnesium alloys and other products, expand application scenarios, and further expand the magnesium alloy industry."[21] Magnesium product development is also part of a major research effort at Chongqing University, where Huang Guangsheng, the legal representative of CMRTL teaches.[22]

36. Chinese IP judges, in their five- year plan (2016-2020) have called for the judiciary to also "actively promote the implementation of my country's … 'Made in China 2025' strategy."[23] While this statement implies that the courts will implement China's technological ambitions in the trial of actual cases, the application of MIC2025 is difficult to ascertain, due to a lack of full transparency in actual case adjudication.[24]

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[21] Chongqing Municipal Government Notice of the 14th Five Year Plan for High-Quality Development of the Manufacturing Industry (2021-2025) (July 19, 2021), (重庆市人民政府关于 印发重庆市制造业高质量发展 "十四五"规划（2021—2025 年）的通知): "发挥镁合金领域技术优势，推动现有企业加快高性能镁合金及变形镁合金、镁合金锻件、耐蚀镁合金等产品开发，拓展应用场景，进一步壮大镁合金产业" available at: https://www.cq.gov.cn/zwgk/zfxxgkml/szfwj/qtgw/202108/t20210803_9538603.html

[22]CQU News, "The Start-Up Work of the National Key Research and Development Plan for Magnesium Alloy Was Held in Chongqing" (Sept. 8, 2016) (镁合金国家重点研发计划项目启动工作会在渝召开), available at https://news-cqu-edu-cn.translate.goog/archives/news2/content/2016/09/28/6c3bcf93d7e4ff1a87bb079e23abeadb594ed026.html?_x_tr_sl=auto&_x_tr_tl=zh-CN&_x_tr_hl=en&_x_tr_pto=wapp (Sept. 28, 2016) (with machine translation).

[23] China original is found at: http://www.law-lib.com/law/law_view.asp?id=566119. The Chinese text is ".积极推动 … "中国制造 2025"战略的实施…"See "Outline of the Judicial Protection of IP in China (2016-2020)" for one English translation, https://www.chinajusticeobserver.com/p/outline-of-the-judicial-protection-of-intellectual-property-in-china-2016-2020.

[24]Mark A. Cohen, *Three SPC Reports Document China's Drive to Increase Its Global Role in IP Adjudication*, (May 5, 2021). "This year's Situation Report continues the trends of decreasing transparency in statistical data, particularly in areas of trade-related concerns such as data on how foreigners fare in Chinese IP courts. Data on foreign-related civil, administrative or criminal cases is no longer being reported at the national level. " (May 5, 2021),

37. Another manifestation of over policies and practices is in patent prosecution policies. The US International Trade Commission has noted that "some non-Chinese firms reportedly find it more difficult to obtain patents in sectors that the Chinese government considers of strategic importance.[25] Two European scholars, Dr. Gaetan De Rasenfosse and Emilio Raitieri, have noted that technology that is within the targeted industrial policies of China's 15 year Medium and Long-Range Scientific and Technology plan (the "MLP") maybe subject to prosecution bias. Their study "Technology Protectionism and the Patent System: Strategic Technologies in China" involved over 500,000 patent applications, and it revealed that foreign applications in certain key technology areas faced negative discrimination. The probability the Chinese patent office will grant patent applications to foreign firms is 5 to 15 percentage points lower than expected in the absence of discrimination.[26] Disparate treatment of foreign patent applications in China should not be surprising, given the "massive system of IP-conditioned state incentives—including subsidies for patents, tax incentives tied to patents, and other monetary and non-monetary awards"[27] that China has in place.

D. Lawfare and Proxy Litigation

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https://chinaipr.com/2021/05/05/three-spc-reports-document-chinas-drive-to-increase-its-global-role-on-ip-adjudication/ (May 5, 2021).

[25]United States International Trade Commission (ITC) Inv. No. 332-514, *China: Intellectual Property Infringement, Indigenous Innovation Policies, and Frameworks for Measuring the Effects on the U.S. Economy* (2010) at page xviii, https://www.usitc.gov/publications/industry_econ_analysis_332/2010/china_intellectual_property_infringement.htm.

[26] Gaétan de Rassenfosse, and Emilio Raiteri, *Technology Protectionism and the Patent System: Strategic Technologies in China* (September 1, 2020), SSRN: https://ssrn.com/abstract=2803379 .

[27] Dan Prud'homme and Zhang Taolue, *China's Intellectual Property Regime for Innovation* (2019), at 62.

38. China's implementation of national industrial policies also affects the nature of Chinese IP "lawfare," which in the Chinese domestic context involves the use of legal tools to advance national technology, political or security interests, typically with a goal of creating an unbalanced playing field with foreigners. Typically, Chinese "lawfare" actions are of two types: policies and practices that are intended to restrict the use or value of foreign IP rights, and proxy litigation in China or overseas to invalidate or devalue those rights. These are each discussed below.

D.1: Policies and Practices to Reduce Foreign IP Values

39. Among China's over policies and practices, China has established IP "early warning systems" ("EWS") to address overseas IP risks. The importance of EWS was underscored by Chinese leader Xi Jinping in a recent article in the leading Communist Party journal *Qiushi*, where he has called on China to "form an efficient EWS for international intellectual property risks" as well as to "build a system for preventing and controlling intellectual property foreign-related risks and increase assistance for overseas intellectual property rights protection of Chinese enterprises."[28]

40. China's plans for a "strong IP economy" similarly calls for "developing and implementing policies to deal with major intellectual property disputes in overseas industries,"[29] of which

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[28] Xi Jinping, *Comprehensively Strengthen the Protection of Intellectual Property Rights, Stimulate Innovation and Promote the Construction of a New Development Pattern* 全面加强知识产权保护工作 激发创新活力推动构建新发展格局, (January 31, 2021), http://politics.people.com.cn/n1/2021/0131/c1024-32018021.html.

[29] State Council, *Several Opinions of the State Council on Speeding up the Construction of Intellectual Property Power under the New Situation* 国务院关于新形势下加快知识产权强国建设的 若干意见-重点任务分工方案 (State Council Office Letter, 2016 no. 66), http://www.gov.cn/gongbao/content/2006/content_315999.htm, http://www.translatetheweb.com/?from=&to=en&a=http%3A%2F%2Fwww.nipso.cn%2Fonews.asp%3Fid%3D32838. See also Mark A. Cohen, *New State Council Decision on Intellectual Property Strategy for China as a Strong IP Economy* (July 24, 2016), "The report discusses a number of strategies and plans to reduce overseas IP risks facing

this IPR may be one. A principal purpose of these efforts is also to "solve the problem of enterprise technology and intellectual property bottlenecks," (解决企业技术与知识产权瓶颈). Such "bottlenecks" are often described as patents or patent families under the control of foreign entities.[30] The principal of Petitioner in this matter, Huang Guangsheng, according to a report in the "Modern Party Member" (当代党员) of Chongqing University news has similarly been described as part of a lab that he works that has goals of "breaking through bottlenecks" **(突破瓶颈)**.[31]

D.2: Proxy Litigation

41. China also uses proxy litigation to reduce the value of foreign IP rights. It is beyond the scope of this expert opinion to prove any malevolent motives by Petitioner and its related parties. Such evidence would require additional discovery, ideally under the supervision of an Article III judge. Nonetheless, information that is available online suggests that such concerns are well-founded.

42. Petitioner has identified its interests in the Petition based on its interests in "manufactur[ing] and market[ing]" products "in the field of the '740 patent ." Petitioner has

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Chinese companies, including assisting Chinese companies in strategic planning, patenting and licensing (Arts. 72-76), developing information resources on risks and cases (Arts. 78-79), and – rather ominously – developing policies for countering large intellectual property cases overseas (with the support of MofCOM, Customs, SAIC, AQSIQ, NCA, and the China Council for the Promotion of International Trade – "CCPIT"), https://chinaipr.com/2016/07/24/new-state-council-decision-on-intellectual-property-strategy-for-china-as-a-strong-ip-country/ (July 24, 2016).

[30] SIPO, *Opinion Regarding the Promotion of Enterprises' Use of Intellectual Property Rights During the Financial Crisis.* 关于促进企业运用知识产权应对 金融危机的若干意见 (August 27, 2009). See http://www.gov.cn/gongbao/content/2009/content_1481664.htm.

[31] Tang Yufang, "(Modern Party Member): Magnesium Dreams Become "Gold" Academician Pan Fusheng's Research and Development of Magnesium Alloys"《当代党员》: "镁"梦成"金" 潘复生院士的镁合金研发之路" (April 24, 2018), https://news.cqu.edu.cn/archives/news2/content/2018/04/24/9a6df9f28c9743322e1266e51279640a7b1494d0.html

investment interests in 7 different companies, but his network includes investments by others as well as his work on behalf of other companies.[32] As noted, Petitioner is, by its name, a "research" company, not a manufacturer, notwithstanding counsel's use of a Chinese language romanized name in the Petition that is meaningless to a non-Chinese speaker. As best I can determine, until the filing of this expert opinion, the meaning of Petitioner's company name has not been disclosed to the USPTO. It is unclear to me whether Petitioner has a significant interest in "manufactur[ing] and market[ing]" (Petition, p. 75) given that it is described in a record of its business license in an online business information source firstly as involved in the "research and development of new materials and technology transfer; technical consulting services" (新型材料的研发及技术转让、技术咨询服务). It is reasonable to assume that it may instead be acting as a proxy for others, perhaps with a goal of advancing Chinese industrial policy goals, or that it is, in the words of Prof. Curtis J. Milhaupt, in his research on a related problem involving state-owned enterprises in China, that it is "Janus-faced … part commercial actor; part public policy actor."[33]

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[32] Curtis J. Milhaupt and Mariana Pargendler， "Governance Challenges of Listed State- Owned Enterprises Around the World: National Experiences and a Framework for Reform," 50 Cornell International Law Journal Vol. 3, at pp 473, 540 （2017）。Available at: https://scholarship.law.cornell.edu/cilj/vol50/iss3/3,

[33]See the website qcc.com （企查查·）【enterprise search】: https://www.qcc.com/firm/5c3dde300a33fb567396520d5a87e1bc.html, searched on May 29, 2023, a translation of its business scope includes "research and development of new materials and technology transfer, technical consulting services; enterprise management consulting, marketing planning, corporate image design, business information consulting services; design and research and development of magnesium and aluminum materials; engineering information consulting; metal material processing and technology development, technical services; sales: non-ferrous metal materials, office supplies, general machinery and accessories." (一般项目：新型材料的研发及技术转让、技术咨询服务；企业管理咨询、市场营销策划、企业形象设计、商务信息咨询服务；镁、铝材料的设计和研发；工程信息咨询；金属材料加工及技术开发、技术服务；销售：有色金属材料、

43. The Petitioner's legal representative and principal shareholder, Huang Guangsheng, has similarly diverse interests. In addition to his commercial interests (apparently in seven different enterprises),[34] he appears to be an employee of a state-owned enterprise, Chongqing University, where he is affiliated with its National Engineering Research center for Magnesium.[35] According to press reports, he also appears to be a member of the Communist Party.[36] His academic biography on the Chongqing University website also notes that he has actively participated in a range of national and provincial research projects and likely depends on government support for many of his own research activities.[37]

44. This kind of two-faced Chinese engagement with the West, where an outward facing effort is made to portray an enterprise as commercially oriented and based on market principles, while inward facing materials openly defer or implement national political goals, is not uncommon. A recent Hoover Institution report identified the possibility that Chinese universities and researchers were publishing more sensitive materials in Chinese language publications, and that they were obfuscating defense industry links in their English language materials accessed by foreigners.[38] Chongqing University similarly presents a benign outwards appearance on its English language website, where no reference is made to the

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办公用品、普通机械及配件。). I have not compared this business scope with the operations of affiliated companies.

[34] Id.

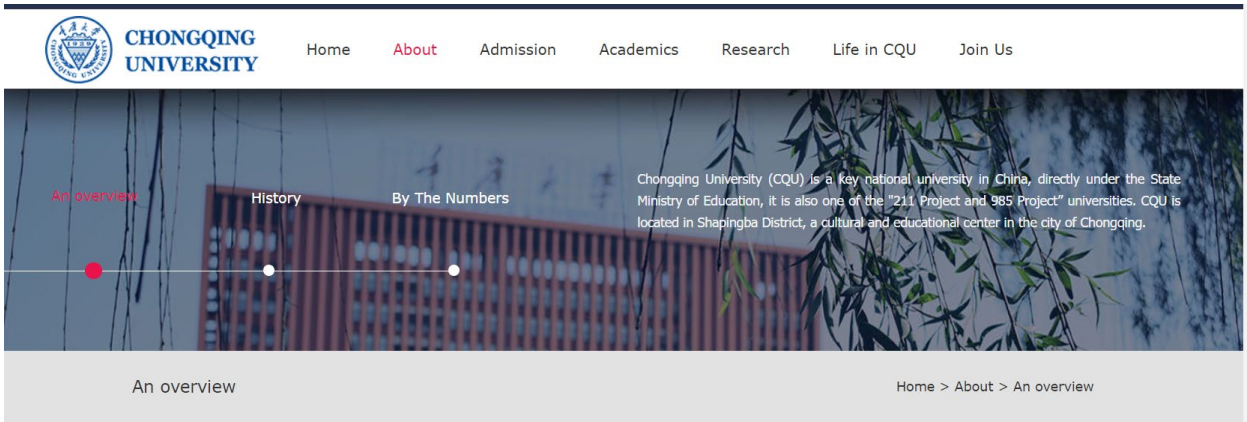
[35] "National Engineering Research Center for Magnesium Alloys, biography of Huang Guangsheng (June 19, 2017), available at http://ccmg.cqu.edu.cn/info/1019/1118.htm.

[36] See fn. 31, supra.

[37] See bio at http://www.cmse.cqu.edu.cn/info/1631/6551.htm/

[38] "Jeffrey Stoff and Glenn Tiffert, "Under the Radar: National Security Risk in US-China Scientific Collaboration" at 5, 55, 80, 84, 90, 96 (July 30, 2020), available at: https://www.hoover.org/global-engagement-rethinking-risk-research-enterprise.

Communist Party of China.[39]



However, the opening page of the Chinese language website openly exhorts its viewers the to study "Xi Jinping thought for a new era of socialist educational thought with Chinese characteristics" alongside with Communist Party hammer and sickle insignia, on a background of red:[40]

45. I am informed that Terves has also been directly targeted by a number of entities in China, via opposition proceedings (ultimately unsuccessful) against Terves' corresponding Chinese

[39] http://english.cqu.edu.cn/About1/An_overview.htm (searches made on May 29, 2023 and June 1, 2023)
[40] https://www.cqu.edu.cn/ (searches made on May 29, 2023 and June 1, 2023)

patents. Utilizing so-called "public interest" litigation by Chinese state-funded academics is a long-established strategy in China, beginning at least as early as 2007, when a group of five Chinese academics challenged a patent held by Philips at the Chinese patent office, for the alleged purposes of "advocating the combination of intellectual property theoretical research and national industrial development."[41] This current patent invalidation effort by a Chinese professor allegedly engaged in "marketing" and "manufacturing" is, in my view, likely no different.

46. Proxy litigation without full disclosure of the real party in interest will weaken our patent system by turning IPR Boards into unwitting agents of autarkic or autocratic states interested in dominance over crucial industrial or technology sectors. In recent years US courts and Congress have become increasingly concerned about insufficient disclosures of the real parties in interest of autocratic sovereign entities in litigation here to advance their own national goals.

47. Professor Diego Zambrano of Stanford University has described this use of proxy lawfare by China and other autocratic societies in recent testimony before the US-China Economic and Security Review Commission (the "Commission"): "[T]he Chinese Communist Party has filed civil cases in U.S. courts through proxy companies or agents, potentially to conceal its involvement in harassment lawsuits…Regimes dress up these cases as run-of-the-mill claims…Sometimes state affiliated companies—like China's Huawei or Russia's Kapersky

[41] 倡导知识产权的理论研究与国家产业发展的结合, as found at the PowerPoint presentation of the Ministry of Commerce by Peking University Professor Zhang Ping "Patent Pools and the Public Interest" (2007) (专利池与公共利益) slide 11. Available on the official website of the Ministry of Commerce, **at** http://chinawto.mofcom.gov.cn/accessory/200706/1181791797010.ppt.

Lab—sue in U.S. courts to pursue seemingly commercial interests that are, on closer look, aligned with an authoritarian regime's goals." [42]

48. Use of PTO procedures to advance Chinese political interests has also been observed in trademark disputes, including one recent cased where a Chinese government trade association, in its likely role as a proxy, is seeking to invalidate the trademark of a Xinjiang dissident that involves a defaced image of the Chinese flag affixed to a pet care product. Defacing the Chinese flag is a crime under Chinese law. As I have observed in a forthcoming law review article, the USPTO needs to discriminate between those cases advancing legitimate market-based commercial interests from China and those which are advancing other interests of the state.[43]

49. A US court would be better positioned than the USPTO in an IPR proceeding to determine in open court, the nature of the real part(ies) in interest and the actual Chinese government interests in this matter, consistent with US trade obligations. A Chinese state or party sponsored or affiliated litigant enjoys a distinct advantage in a USPTO Proceeding compared to a federal court proceeding where it could otherwise be required to disclose its relationships under penalty of contempt proceedings. Moreover, federal judges are better equipped to handle issues involving production of foreign evidence, including information that may be blocked in the United States, or that are prohibited from being revealed to foreigners under China's new national security law, data security law and personal

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[42]Testimony of Prof. Diego Zambrano, (May 4, 2023), before the US-China economic and security Review Commission (https://www.uscc.gov/sites/default/files/2023-05/Diego_Zambrano_Testimony.pdf), see also Diego Zambrano, Foreign Dictators in U.S. Court, 88 U. CHI. L. REV. 157 (2022).

[43] Mark A. Cohen "Parallel Play: The Simultaneous Professional Responsibility Campaigns Against Unethical IP Practitioners by the United States and China" 2023 Akron Law Review (forthcoming 2023), Available at SSRN: https://ssrn.com/abstract=4451763.

information privacy law.[44] I have already encountered problems searching for Petitioner, with at least one site being blocked despite efforts made over several days to search for the company:[45]

Here is the original link:

www.tianyancha.com › spatent › 140234808-2389

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Your request has been suspended due to the following reasons:

1. According to relevant laws and regulations, our website is not available for use outside China mainland.
2. Your requests may be too frequent in very short time. We sincerely suggest you try again later.

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工作时间：9:00-19:00 (北京时间)

If neither reason matches your situation, please reach our customer service for more help.
Tianyancha Customer Service Hotline: (+86)400-608-0000
Customer Service Hours: 9:00-19:00(GMT+8, Beijing, China)

[44] Mark Quist et al, "Chinese data security laws increasingly create roadblocks for litigants seeking discovery in U.S. courts" (March 1, 2022), https://www.technologylawdispatch.com/2022/03/in-the-courts/chinese-data-security-laws-increasingly-create-roadblocks-for-litigants-seeking-discovery-in-u-s-courts/

[45] Search result is for 重庆研镁科技有限公司专利信息查询 - 天眼查 (https://www.tianyancha.com/spatent/140234808-2389, and https://r.search.yahoo.com/_ylt=AwrEsXSU03lkg8QHF9VXNyoA;_ylu=Y29sbwNiZjEEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1685734421/RO=10/RU=https%3a%2f%2fwww.tianyancha.com%2fcompany%2f140234808/RK=2/RS=RNOdKs2isczSCzGxUmBqstUxwAo-) and search result page. Searches conducted May 26, 2023, May 29, 2023, June 1, 2023 and June 2, 2023).

50. Absent further discovery and disclosures, including affirmations under penalties of perjury, it is extremely difficult to determine if the goals of Petitioner or Petitioner's legal representative in this proceeding are any different from those of the Chinese state, the Communist Party, Chongqing municipality or Chongqing University in this sector. Instead, a safe assumption is that the goals and methods are well-synched, unless reliably proven otherwise.

E. Integrity of the Patent System is at Risk if IPR is Granted

51. Continually tying up innovative company in questionable IP validity proceedings when a reasonable independent alternative exists, deprives a company like Terves of its "key to success." As mining engineer and China expert, Michael Komesaroff has noted, "the key to success revolves around capital management, or whether project developers can build new plants more quickly and cheaply than their competitors." Ex. 2006, Komesaroff, p.13. A company in Terves' position would be particularly known to be vulnerable to such tie-ups, since as described, it suffers consequences from anti-dumping duties designed to protect an upstream domestic industry, as well industrial policies oriented towards increasing the value-added production of magnesium alloy product from China.

52. The extensive nature of Chinese industrial targeting against the technologies encompassed by the '740 patent undermines the "integrity" of the market-based IP system in the United States, within the meaning of Sec. 316(b). Webster's defines "integrity" as "firm adherence to a code of especially moral or artistic values." In deciding whether to initiate this IPR, USPTO should evaluate these non-market practices in light of the threat they could pose to the integrity of the US patent system under China's "all of society" approach to industrial

policy.[46] A fundamental "value" adhered to in the international and US IP systems is that "intellectual property rights are private rights" (TRIPS Agreement, Preamble)[47] and that "patents shall have the attributes of personal property" (35 U. S. C. §261). The National Security Commission on AI in its recent report has noted: "America's intellectual property (IP) laws and institutions must be considered as critical components for safeguarding U.S. national security interests, including advancing economic prosperity and technology competitiveness. Prioritization of IP policy is especially important given China is both leveraging and exploiting IP policies as a tool within its national strategies for emerging technologies."[48]

53. In addressing the threats posed by non-market industrial policies in IPRs, USPTO also would not be breaking new ground for itself. USPTO has also recently recognized the threat to the integrity of the US IP systems through China's non-market interventions by adjusting its own examination policies and practices, particularly for trademarks. According to the USPTO report "Trademarks and patents in China: The Impact of Non-Market Factors on Filing Trends and IP Systems," these non-market interventions have "stretched the capacity of China's patent and trademark examination systems, and cluttered China's registries, which complicates clearance searches and can narrow the scope of available protection." There is no reason for USPTO to assume that IPRs are exempt from the government-

[46] https://www.merriam-webster.com/dictionary/integrity .
[47] TRIPS Preamble, https://www.wto.org/english/res_e/publications_e/ai17_e/trips_preamble_jur.pdf.
[48] NSCAI, *Final Report – National Security Commission on Artificial Intelligence* (Mar 9, 2021), at p. 465, https://www.nscai.gov/wp-content/uploads/2021/03/Full-Report-Digital-1.pdf .

oriented distortionary approaches that have affected, and will continue to affect, the US IP system.[49]

54. In summary, initiation of an IPR at the request of CMRTL for the '740 patent should not be undertaken absent an adequate analysis of the potential impact in the US economy and the integrity of the US patent system due to Chinese industrial policy interventions in the technologies encompassed by the '740 patent.

55. As well, initiation of IPR at the request of CMRTL for the '740 patent would amount to USPTO allowing itself to be used to advance non-market aims (increasing cost burdens in a cost-sensitive sector) of a foreign rival. Entities who have standing and need to challenge assertedly-invalid intellectual property rights may always do so in an Article III federal court. A federal agency should strive to avoid letting itself be weaponized as the instrumentality of a foreign rival launching cost-multiplying attacks against a domestic player.

56. And finally, initiation of IPR at the request of CMRTL for the '740 patent would likely place the USPTO Director (acting through his agents, the 3-member Board panel) in conflict with a direct order of the Executive. As an agency leader, the Director is duty-bound to follow EO13953. That executive order noted that "Our dependence on one country, the People's Republic of China (China), for multiple critical minerals is particularly concerning." For the United States to broadly enhance its mining and processing capacity, its actions must "protect" domestic industry participants within the scope of the still-in-force National Emergency over critical mineral processing, not harm them.

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[49] USPTO, *Trademarks and Patents in China: The Impact of Non-Market Factors on Filing Trends and IP Systems* (Jan. 2021), at 9, https://www.uspto.gov/sites/default/files/documents/USPTO-TrademarkPatentsInChina.pdf .

57. Relevant to this, I am informed that Terves is currently under contract with the defense logistics agency (DLA), including contract SP4701-21-P-0096, where it is tasked with utilizing its magnesium processing infrastructure to produce critical rare earth metals, specifically gadolinium metal, to supply critical defense needs (in the absence of any other US source).

III. INITIATING THE IPR WOULD HAVE A DISPARATE ECONOMIC IMPACT ON A SMALL INVENTOR IN THE UNITED STATES COMPETING WITH CHINA

58. A final economic reason for the USPTO to not initiate an IPR relates to United States policies to promote innovation of Small Medium Enterprises (SMEs), and the relatively weak position that US SMEs, such as Terves, enjoy in China.

59. I am informed that Terves qualifies as an SME, at least because it has only about 45 employees.

60. China's IP environment supports Chinese SME's through several policy mechanisms not unlike the industrial policy mechanisms previously described. These policies create an environment where SMEs play an important role in China's innovation plans. In evaluating the economic impact of initiating this IPR, it is important for the Director recognize that the economic impact is not only of a Chinese company, or companies or research institutions of indeterminate size on a small US company, but that smaller, IP-intensive Chinese companies also enjoy certain privileges in China which, by comparison, place small companies such as Terves at a disadvantage in global trade.

61. The role of SMEs in IP in China is often analyzed in China through the statistical importance of "non-service" patents, which are patents filed outside of an employment relationship. The difference in filing activity by foreign and domestic SMEs in China is extreme. The total number of non-service patent applications filed in China by individuals outside of their

employment for only the first 11 months of 2020 was 970,931 applications. This number is so large that if the total of non-service patent applications from Chinese inventors in China for the first 11 months of 2020 were constituted as separate patent office, it would constitute the second largest patent office in the world, with about 50% more patents than the USPTO received from all sources during the 2020 fiscal year (653,311).[50] Unfortunately, China has stopped publishing statistical data on patent applications due, I believe, to criticism over the large number of low quality, subsidized patent applications that it was receiving. As I noted on my blog, China did a "statistical switcheroo" in response to this criticism.[51]

62. This same data also reveals the insignificant role that foreign non-service inventors play in China's IP environment. In first 11-month data for 2020, 11.1% of invention patents, 20.1% of utility model patents, and 41.6% of design patent applications from China were filed outside of the employment relationship. The corresponding numbers of foreign non-service invention applications during this time period in these categories was 1.8%, 6.1% and 5.4% for a paltry total of 3,767, or about 0.39% of the Chinese total.[52] The United States does not have an equivalent statistical typology. Prior to the AIA, American "independent inventors"

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[50] Unfortunately, full-year 2020 data is not available, as the Chinese government has stopped publishing data based on applications because of a recognition that patent quality may be suffering due to a focus on quantity. See Mark A. Cohen, *CNIPA Does A Statistical Switcheroo* (Feb. 16, 2021), https://chinaipr.com/2021/02/16/cnipa-does-a-statistical-switcheroo/. For comparisons to US data, I relied upon the 2020 USPTO Performance and Accountability Report at p. 188 (603,764 total applications filed for FY 2020). https://www.uspto.gov/sites/default/files/documents/USPTOFY20PAR.pdf

[51] See https://www.cnipa.gov.cn/col/col61/index.html (statistical data only available on patent grants); https://chinaipr.com/2021/02/16/cnipa-does-a-statistical-switcheroo/ (Feb. 16, 2021).

[52] CNIPA, *Dec 2020 CNIPA Application and Registration Monthly Reports,* 2020 年 11 月国家知识产权局审查注册登记统计月报 https://www.cnipa.gov.cn/module/download/down.jsp?i_ID=155701&colID=246

had generally been a much smaller cohort than Chinese non-service inventors.[53] Today, micro entity applications at USPTO in FY 2020 constituted 2.5% of total applications, with domestic applicants constituting 4.2% and foreigners or 1.01%.[54] Overall, the data suggests that SMEs/non-service inventors played a much larger role in the Chinese system than in the United States, and that foreign non-service inventors play a much smaller role in the Chinese market than foreign micro entities play in the United States market.

63. Chinese court dockets also reveal the active role of Chinese SME inventors in China. According to one study, non-practicing entities filed 44.7% of all patent infringement lawsuits in 2015 and 2016. Individual inventors, instead of professional businesses, also accounted for 99.6% of NPE cases (1528).[55] Foreigners, who may constitute less than 1% of the current overall IP docket in China, are unlikely to be a significant share of the individual inventor patent docket in China.

64. Chinese SME inventors have flourished for many reasons. Patent and trademark application fees are inexpensive and have been subsidized by the state. Utility model and design patents are issued quickly, without substantive examination, and are generally favored by Chinese independent inventors. Inexpensive and fast enforcement mechanisms, including limited discovery and expedited adjudication, reduce barriers to entry for small company

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[53] Mark A. Cohen, *Understanding Service Inventions Data,* (Dec. 1, 2012), https://chinaipr.com/2012/12/01/understanding-service-inventions-data/; see attached link: https://chinaipr2.files.wordpress.com/2012/12/serviceinventions.pptx.

[54] USPTO, *Performance and Accountability Report (2020)* at p. 206, https://www.uspto.gov/sites/default/files/documents/USPTOFY20PAR.pdf .

[55] Renjun Bian, *Patent Trolls in China: Some Empirical Data*, in 40 COMPUTER LAW & SECURITY REV (2021), https://www.sciencedirect.com/science/article/abs/pii/S0267364920301229#:~:text=Some%20evidence%20indicates%20that%20trolls,a%20potential%20lower%20patent%20quality.&text=Others%2C%20by%20contrast%2C%20have%20found,those%20owned%20by%20operating%20companies.

litigants. First instance cases are required by China's Civil Procedure Law to be completed with six months, and second instance cases are completed in three months. According to one database, of 7,885 cases analyzed, first instance patent litigation in China was completed on average in 5.9 months.[56] Chinese domestic IP litigation, including appeals, are likely to be completed in about half the time of the eighteen months required for an IPR.

65. Foreign SME's do not enjoy such expedited civil procedures in China. Section 277 of China's Civil Procedure Law suspends relevant statutory time frames when a foreign litigant is involved.[57] In addition, China interposes burdensome and discriminatory procedures and practices on foreign litigants, including notarization and consularization requirements with powers of attorney for initiating lawsuits in China[58] and denial of licenses to US law firms to practice law in China or to hire Chinese lawyers that can further delay proceedings.[59]

66. China also provides support to its SMEs in foreign-related IP litigation overseas in a range of practices, some of which are detailed below:

(a) China encourages SME inventorship through promoting "mass innovation." A State Council plan on "mass innovation" states that China will "strengthen the protection of intellectual property rights for entrepreneurship ... and improve the rapid intellectual

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[56] CIELA database, www.ciela.cn (last visited April 11, 2021).
[57] See translation of Civil Procedure Law (2017) at https://www.chinajusticeobserver.com/law/x/civil-procedure-law-of-china-20170627
[58] See Mark Cohen, *Ministry of Justice Issues Report on Notarization in IP Matters* (Aug 2, 2015), https://chinaipr.com/2015/08/01/ministry-of-justice-issues-report-on-notarization-in-ip-matters/ .
[59] Mark A. Cohen, *International Law Firms in China: Market Access and Ethical Risks*, 80 FORDHAM L. REV. 2569 (2012), https://ir.lawnet.fordham.edu/flr/vol80/iss6/9.

property rights protection and rights protection assistance mechanism, and shorten the period of validity review and infringement handling."[60]

(b) China has traditionally provided extensive subsidies for patent applications, including support for overseas applications. While China has issued rules to reduce the low-quality patents attendant to such subsidies, it is too soon to tell if these new policies will be effective or adversely affect the privileged position of China's small inventors.

(c) China's IP Early Warning Systems, previously described in this opinion, actively support Chinese SMEs. In addition to the EWS, Chinese IP agencies and other offices provide support such as patent filing subsidies and other financial support, overseas consultations, and support for SME's IP-related business activities.[61]

67. The various policies supporting Chinese domestic SME's contrast with the weak position foreign SME's face in protecting their IP rights domestically and in China. There are a range of scattered programs to support US SMEs to protect their IP at the USPTO and in other government agencies, such as the USITC and SBA. Senator Marco Rubio also identified this

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[60] State Council, Opinion Concerning Strengthening the Promotion of Mass Enterprise and Innovation, 关于大力推进大众创业万众创新若干政策措施的意见 Guofa 32 (2015), http://www.gov.cn/zhengce/content/2015-06/16/content_9855.htm .

[61] CNIPA, Politics to Develop the Innovation of SMEs, 政策护航中小企业创新发展 (Apr. 25, 2021), available at https://www.cnipa.gov.cn/art/2021/4/25/art_55_158749.html (April 25, 2021). This recent policy calls for "Exploring the establishment of an overseas service system for SMEs, consolidate the service mechanism for the international development of SMEs, and providing assistance to SMEs in terms of international business legal consultation, intellectual property protection, technical trade measures, and quality certification. "探索建设中小企业海外服务体系，夯实中小企业国际化发展服务机制，在国际商务法务咨询、知识产权保护、技术性贸易措施、质量认证等方面为中小企业提供帮助. See also the 2008 proposal of the Guangdong People's Consultative Congress " Proposal Concerning Establishing an SME Export Quality and IP Dispute Response and Early Warning System," 关于"尽快建立中小企业出口贸易质量及知识产权纠纷应对与预防机制"的建议 http://www.gdszx.gov.cn/zxhy/qthy/2008/wyta/200801/t20080118_60277.htm; see also the Beijing IP Office Budget Table Four, Project Budgets, 2017 北京市知识产权局 2017 年预算 04 表_项目支出预算表.xls, providing 37,500,000 RMB in support to SME's, http://zscqj.beijing.gov.cn/attach/16/cce4af7bae5c4e0586949df8ab27a66e.pdf.

need in his committee's report on MIC2025 that the US government should establish "a national priority for value chain progress and its attendant workforce benefits to skills and pay.... [the] approach would likely favor startups and small businesses with the ability to act anew in the application of new technology over more trenchant large firms."[62] A recent GAO report concluded "the Patent Office doesn't evaluate whether its small business programs work as intended, and efforts to foster better collaboration between the agencies in this area are incomplete."[63]

68. Addressing IP-related challenges by SMEs in China has also been part of several efforts by foreign governments. The European Union has also set up a separate "help desk" to better enable SMEs to handle IP issues in China.[64] The Commerce Department established an SME China IPR Advisory Program in 2005, and various training programs have been put in place over the years to help SME's navigate China's legal system, such as USPTO's "China Road Shows."[65] I contributed to creating many of these programs. Unfortunately, these programs have not led to demonstrable progress on foreign SMEs accessing China's IP system, as the previous data on patent filings demonstrates.

69. In his address on World IP Day in 2021, President Biden spoke to the critical role that SMEs play and their economic impact. He noted that small businesses "make up 90 percent of businesses in the United States, and create two-thirds of new jobs" and that they are the

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[62] Made in China 2025 and the Future of American Industry, fn. 5, at p. 13, https://www.rubio.senate.gov/public/files/Rubio-China-2025-Report.pdf.

[63] GAO Report 20-556, *Intellectual Property: Additional Agency Actions Can Improve Assistance to Small Businesses and Inventors* (Sept 28, 2020), https://www.gao.gov/products/gao-20-556.

[64] European Commission, China SME Helpdesk, https://intellectual-property-helpdesk.ec.europa.eu/regional-helpdesks/china-ipr-sme-helpdesk_en.

[65] USPTO, "China IP Road Shows and webinar events" (undated), (https://www.uspto.gov/ip-policy/ip-china/china-ip-road-shows-and-webinar-events) (viewed June 1, 2023).

"engines of our economic progress."[66] It is incumbent upon the USPTO to also consider the economic impact on SME inventors under Sec. 316(b), particularly where—as in this case—there is a strong-trade related component to the IPR initiated by CMRTL. As far as I am aware, thus far there has been no consideration of the challenges faced by SMEs when their patents are in trade-sensitive technologies. By comparison, the USITC has a dedicated Trade Remedy Assistance Office to help SMEs navigate filing a Sec. 337 complaint, which will often involve IP-related claims.[67] US SMEs face Chinese competition in all IP-related venues, including at the USPTO or USITC. They not only must face non-market oriented foreign competition from China. They are also facing two other trade-related burdens: large, globally dominant Chinese companies challenging their patents in their home market, and a highly circumscribed role and biased position against them in the Chinese market.

IV . CONCLUSION: AN ARTICLE III COURT IS THE APPROPRIATE VENUE

70. There are several areas of economic concern under Sec. 316(b) that the PTO should consider in determining whether to initiate the IPR: (a) a domestic critical mineral processor who falls within the scope of National Emergency directives by the President requiring "protection" by federal agencies (not potential harm by federal agencies); (b) a "whole of society" set of targeted industrial policies of China intended to diminish the value of the '740 patent and increase capital costs through litigation, cyber intrusions, state controls over factors of production and other tools; (c) "lawfare" by a foreign rival against this critical mineral processor through policies that target its IP rights in China, and use of proxy

[66] White House, *A Proclamation on World IP Day,* (April 23, 2021), https://www.whitehouse.gov/briefing-room/presidential-actions/2021/04/23/a-proclamation-on-world-intellectual-property-day-2021/.
[67] See Trade Remedy Assistance Office, https://www.usitc.gov/press_room/trao/trao_program_info.htm.

litigation, where the identity and motivation of the parties and their interests in this litigation are obfuscated; and (d) the disparate treatment of US SME's in China compared to Chinese SME's in China which adversely affects the US economy under Sec. 316(b). I have also shown that there are concerns about the impact on the "integrity of the patent system" by reason of initiating an IPR where, *inter alia*, there are state-directed "non-market practices" that distort the integrity of the market-oriented system, discount the role of IP as a private property right and disadvantage small and medium enterprises. Finally, I have noted that institution by the PTAB would likely place the Director in direct contravention of an Order by the President, in disregard of the National Emergency.

71. My opinion is based on available published data and not on specific inquiries into CMRTL, its patent profile, and strategies. I believe such inquiries are best made by a federal court, and not an expert witness or the PTAB. A more exhaustive analysis could require hundreds of pages of additional opinion and research. My purpose, however, is not to convince the USPTO that CMRTL or Huang Guangsheng are malevolent actors or even that it is deserving of our opprobrium. My goal has instead been to demonstrate that this case likely involves complex issues and equities with additional difficulties arising from ascertaining the motivations and resolving the conflicting information on the nature of the Petitioner and Huang Guangsheng that are beyond the jurisdictional mandate of an IPR.

72. The solution to these complicating factors is quite simple: CMRTL can continue to pursue its patent remedies itself before an Article III court (if it can demonstrate that there is standing), where further background on its motivations and plans can be discovered, and the court can weigh due consideration for the public interests in accordance with applicable

law before that proceeding. US courts are far better equipped to discover whether a litigant has malicious motivations. An IPR is not an appropriate venue for an SME and a non-United States firm of indeterminate size and government support such as CMRTL to resolve issues under Section 316(b) that involve the intersections of such areas as Chinese industrial policy, US trade law, trade sanctions, Chinese government lawfare and US intellectual property law.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 2, 2023

MARK ALLEN COHEN