In the United States Court of Federal Claims

POWER DENSITY SOLUTIONS LLC, Plaintiff, v. THE UNITED STATES OF AMERICA, Defendant.	)	No. 21-911C (Filed: April 8, 2022)

Trevor Q. Coddington, Insigne PC, Carlsbad, CA, for Plaintiffs.

Grant D. Johnson, Trial Attorney, U.S. Department of Justice, Civil Division, Commercial Litigation Branch, Washington, DC, with whom were Gary L. Hausken, Director, and Brian M. Boynton, Acting Assistant Attorney General, for Defendant.

OPINION AND ORDER

KAPLAN, Chief Judge

Plaintiff Power Density Solutions, LLC ("Power Density"), the assignee of United States Patent Numbers 6,552,901 ("the '901 patent") and 6,313,992 ("the '992 patent"), and Plaintiff James J. Hildebrandt (their original owner) filed this action against the government under 28 U.S.C. § 1498(a). First Am. Compl. ¶¶ 1, 4–6, 8 ("Am. Compl."), ECF No. 16. They allege that at least eight research institutions and eleven defense contractors, acting for the government and with its consent and authorization, infringed both patents. Id. ¶¶ 9–10. [1]

[1] Plaintiffs identify the following research institutions in their Amended Complaint: "University of Baltimore (University of Maryland), University of Missouri System, . . . Georgia Tech Research Corporation, [t]he Leland Stanford Junior University, Massachusetts Institute of Technology, Purdue University, Rensselaer Polytechnic Institute, . . . and Universitat ULM." Am. Compl. ¶ 10.

Plaintiffs also identify the following defense contractors: "International Business Machines Corporation ("IBM"), Lockheed Martin Corporation, Northr[o]p Grumman Systems Corporation, Nuvotronics, Inc., Raytheon Company, Selecttech Services Corporation, . . . BAE

Now before the Court is the government's partial motion to dismiss Plaintiffs' claims pursuant to Rules 12(b)(1) and 12(b)(6) of the Rules of the Court of Federal Claims ("RCFC"). Def.'s Partial Mot. to Dismiss ("Def.'s Mot."), ECF No. 12. The government argues that: (1) Plaintiffs have not established the Court's subject-matter jurisdiction over the claims concerning allegedly infringing activities by research institutions that were funded by government grants or cooperative agreements, id. at 4–15; and (2) Plaintiffs failed to state a claim upon which relief can be granted because—other than for two of the defense contractors—Plaintiffs did not identify real-world systems that allegedly infringed their patents, id. at 15–20.

For the reasons set forth below, the Court concludes that Plaintiffs have not established by preponderant evidence the Court's jurisdiction over the claims involving third-party research institutions. The Court also concludes that, as to the defense contractors, the Amended Complaint states a claim for relief and sufficiently identifies the allegedly infringing systems. The Court will therefore grant the government's motion to dismiss Plaintiffs' claims against the research institutions under RCFC 12(b)(1) and deny the government's motion to dismiss Plaintiffs' claims against the defense contractors under RCFC 12(b)(6).

BACKGROUND[2]

I. Power Density's Patents

In 2001, the United States issued the '992 patent to James J. Hildebrandt. Am. Compl. Ex. A, at 2, ECF No. 16-1.[3] The patent, captioned "Method and Apparatus for Increasing the Power Density of Integrated Circuit Boards and Their Components," id. at 2, describes a system for cooling an electronic component by directing cooling fluid through "at least one interior passageway" that is connected to "a plurality of other passageways" that lead to the component's surface, id. at 13. The cooling fluid passes through this network of passageways "to conductively cool the interior of the [electronic] component and . . . to cool the surface of said component at least partially by evaporative cooling." Id. The patent explains that "thermal constraints" often limit how much power electronic systems can pack into small spaces, and that "[t]he net effect"

Systems Information and Electronic Systems, Raytheon BBN Technologies Corp., . . . Booz Allen Hamilton Inc., SPC Federal, LLC, [and] L3 Communications Corporation." Id.

[2] The facts set forth in this section are based in part on the factual allegations in the Amended Complaint and the attached exhibits, which the Court accepts as true for purposes of ruling on the partial motion to dismiss under RCFC 12(b)(6). The Court also includes jurisdictional facts drawn from the government's briefs and the attached appendices, as well as the parties' representations at oral argument. See Rocovich v. United States, 933 F.2d 991, 993 (Fed. Cir. 1991) (explaining that the Court may go outside of the pleadings when ruling on a motion to dismiss under RCFC 12(b)(1) and "inquire into jurisdictional facts" to determine whether it has jurisdiction). Except where noted, the facts are not in dispute.

[3] Documents filed electronically are imprinted with an ECF header and page number, and the Court's citations to the exhibits and the Amended Complaint refer to the ECF pagination.

of Mr. Hildebrandt's system for cooling electronic components "is increased power density." See id. at 9.

The United States issued Mr. Hildebrandt the '901 patent, captioned "Apparatus and System for Cooling Electronic Circuitry, Heat Sinks, and Related Components," in 2003. Am. Compl. Ex. B, at 2, ECF No. 16-2. This patent, like the '992 patent, describes a system of passageways that supply cooling fluid to the interior and surface of integrated circuit boards and electronic components. Id.; see also Am. Compl. Ex. A, at 2. Additionally, the '901 patent emphasizes the cooling system's application to heat sinks, see generally Am. Comp. Ex. B, and explains how the invention "may be used to increase the efficiency of heat sinks," id. at 9. Specifically, the patent claims a method for "providing a heat sink with at least one interior passageway" that connects to "at least one secondary passageway" that leads to the heat sink's surface, and for passing cooling fluid through these passageways "to cool said heat sink through both conductive and evaporative cooling." Id. at 13.

In 2018, Mr. Hildebrandt assigned his interest in the '992 patent and the '901 patent to Power Density. Am. Compl. ¶ 6.

II. The Government's ICECool Program

From 2012 to 2017, the United States Defense Advanced Research Projects Agency ("DARPA") administered the Intrachip/Interchip Enhanced Cooling ("ICECool") program. Id. ¶¶ 9, 14 n.1; Oral Arg. at 4:05–22. The program's purpose was "to explore potential new cooling devices, techniques, and systems for high-powered electronics." Oral Arg. at 4:05–22. According to Plaintiffs, the program aimed in particular "to develop next-generation military electronics thermal management systems." Am. Compl. ¶ 9. The record suggests that the ICECool program sought to develop technology to cool computer circuitry and electronic components—and thereby boost their performance—with an "[e]mbedded cooling paradigm" (as opposed to a traditional "[r]emote cooling paradigm") that included the use of "convective/evaporative microfluidics." See App. to Def.'s Mot., ECF No. 12-1, at 235–36 (2015 DARPA Presentation titled "ModSim Challenges in Co-Design of Embedded Cooling Solutions," hereinafter "DARPA presentation"); see also Am. Compl. ¶ 14 ("The ICECool program developed advanced electronics cooling techniques for high-performance embedded computer (HPEC) and RF monolithic microwave integrated circuit (MMIC) power amplifiers by convective or evaporative microfluidic cooling installed directly onto the electronic devices and packaging.").

The ICECool program consisted of two phases: ICECool Fundamentals and ICECool Applications. Oral Arg. at 4:23–35; see also App. to Def's Mot. at 240. The Fundamentals phase focused on "scientific and engineering fundamentals" and was "directed toward simulations and models" for exploring the effectiveness of potential cooling systems. Oral Arg. at 4:36–5:03. As counsel for the government explained at oral argument, during this phase, the program "mainly involved universities and research institutions." Id. at 5:05–11.

The Applications phase, in contrast, was "intended to actually develop . . . applications or hardware prototypes that could actually be used to cool electronics." Id. at 5:20–33. This phase primarily involved defense contractors, such as IBM and Lockheed Martin Corporation, rather than universities and research institutions. Id. at 6:40–52.

The Applications phase, in turn, had two stages. Id. at 6:35–40. In the first stage, participants "were to develop a simulation or a model that would showcase a proposed design for a new cooling system." Id. at 6:56–7:15. The government would then evaluate these proposals and select those that "had merit" to proceed to the second stage. Id. at 7:15–25. It was in that second stage that participants "would actually attempt to create a hardware prototype of the system . . . proposed" in the first stage. Id. at 7:16–34. Participants that successfully developed prototypes at the end of the second stage would deliver those prototypes to the government. Id. at 7:35–46.

Throughout the ICECool program, DARPA and its partner agencies awarded contracts and grants to, and entered into cooperative agreements with, third-party defense contractors and research institutions. See Am. Compl. ¶¶ 9–10, 18; see also id. ¶ 14 n.1 (citing Defense Contractors to Develop Next-Gen Military Electronics Thermal Management, Electronics Cooling (Nov. 11, 2013), http://www.electronics-cooling.com/2013/11/defense-contractors-develop-next-gen-military-electronics-thermal-management/); App. to Def's Mot. at 1–179 (grant and cooperative agreement awards with eight research institutions that participated in the ICECool program).

At oral argument, the government asserted that the research institutions named in the Amended Complaint participated in the Fundamentals phase of the program and that the defense contractors participated in the Applications phase. Oral Arg. at 7:56–8:18. Plaintiffs' counsel, however, took issue with this assertion, and stated that Plaintiffs' allegations relate solely to activities that the research institutions conducted as part of ICECool Applications. Id. at 37:21–38:16; see also App. to Def.'s Mot. at 247–48 (DARPA presentation).

III. Plaintiffs' Amended Complaint

Plaintiffs allege that at least eleven defense contractors and eight research institutions developed systems that infringed their patents while participating in the ICECool program. Am. Compl. ¶¶ 1, 9–10. They further allege that the government contracted with, entered into cooperative agreements with, or awarded grants to, these entities for the purpose of "develop[ing] next-generation military electronics thermal management systems," pursuant to DARPA's mission "to invest in technologies to improve our national security." Id. ¶¶ 9, 13; see also id. ¶¶ 18, 26, 42. Therefore, Plaintiffs allege, the research institutions and defense contractors "acted for the United States and with the authorization or consent of the United States in committing acts of infringement." Id. ¶ 9.

More specifically, Plaintiffs allege that participants in the ICECool program "developed advanced electronics cooling techniques" that used "convective or evaporative microfluidic cooling installed directly onto the electronic devices." Id. ¶ 14. Plaintiffs further allege that the government "directed the [research institutions and defense contractors] to develop microfabrication techniques to implement infringing ICECool designs into existing military systems." Id. ¶ 16. Plaintiffs also allege that the products implementing ICECool technology "were suitable for use prior to expiration of the '992 patent and the '901 patent" and contained each limitation of at least one claim of the patents. Id. ¶ 17. And Plaintiffs contend that the government authorized and paid for the manufacture, sale, and use of systems implementing ICECool technology and "accepted delivery of" such systems. Id. ¶¶ 18–20.

The Amended Complaint includes images and descriptions that Plaintiffs say depict four systems that exemplify the types of systems that the research institutions and defense contractors developed under the ICECool program. Id. ¶¶ 28–33, 44–55. The four allegedly infringing systems belong to IBM, Northrop Grumman Systems Corporation ("Northrop Grumman"), Raytheon Company ("Raytheon"), and Lockheed Martin Corporation ("Lockheed Martin"). Id. ¶¶ 28, 44, 48, 52. For three of these allegedly infringing systems, Plaintiffs base their allegations in part on images and descriptions in United States patents. See id. ¶¶ 45–47 (citing Am. Compl. Ex. C ("Northrop Grumman patent"), ECF No. 16-3); id. ¶¶ 49–51 (citing Am. Compl. Ex. D ("Raytheon patent"), ECF No. 16-4); id. ¶¶ 53–55 (citing Am. Compl. Ex. E ("Lockheed Martin patent"), ECF No. 16-5).

Additionally, Plaintiffs allege, "[m]any, if not all, of the [research institutions and defense contractors] developed and now commercialize products implementing ICECool technology in the United States." Id. ¶ 16. But information about some of these systems is not publicly available, Plaintiffs say, because the systems "are deemed sensitive to national security." Id. ¶¶ 36, 58. Plaintiffs allege that their "efforts to identify all unlicensed uses of the ['992 patent and the '901 patent] are ongoing and will be completed after a reasonable opportunity for discovery in this case." Id. ¶¶ 37, 59.

IV. This Lawsuit

Plaintiffs commenced this lawsuit on February 11, 2021. Compl. ¶ 1, ECF No. 1. They filed their First Amended Complaint on June 11, 2021. ECF No. 8. The government filed its Partial Motion to Dismiss on July 9, 2021. Def.'s Mot. On August 6, 2021, Plaintiffs filed their Response to the Government's Motion, Pls.' Resp. to Def.'s Partial Mot. to Dismiss ("Pls.' Resp."), ECF No. 15.[4] The government filed its Reply on August 27, 2021. Def.'s Reply in Support of Def.'s Partial Mot. to Dismiss ("Def.'s Reply"), ECF No. 19.

On March 17, 2022, the parties presented oral argument on the government's motion.

DISCUSSION

I. The Government's Motion to Dismiss for Lack of Subject-Matter Jurisdiction

A. Standards for Motion to Dismiss Under RCFC 12(b)(1)

In considering a motion to dismiss for lack of subject-matter jurisdiction, the Court "accept[s] as true all undisputed facts" in the pleadings and "draw[s] all reasonable inferences in favor of the plaintiff." Trusted Integration, Inc. v. United States, 659 F.3d 1159, 1163 (Fed. Cir. 2011) (citing Henke v. United States, 60 F.3d 795, 797 (Fed. Cir. 1995)). The plaintiff, however,

[4] Also on August 6, 2021, Plaintiffs filed a corrected copy of their First Amended Complaint. ECF No. 16. Plaintiffs' First Amended Complaint appeared on the electronic docket with the pages in reverse order. See ECF No. 8. On July 13, 2021, the Court directed Plaintiffs to file a corrected copy of that document, ECF No. 14, and Plaintiffs later refiled the First Amended Complaint, this time with the pages in the right order, ECF No 16.

bears the burden of establishing subject-matter jurisdiction by a preponderance of the evidence, id., and "cannot rely merely on the allegations in the complaint if jurisdiction is challenged," John R. Sand & Gravel Co. v. United States, 57 Fed. Cl. 182, 186 (2003) (citing Reynolds v. Army & Air Force Exch. Serv., 846 F.2d 746, 747 (Fed. Cir. 1988)). Instead, to avoid dismissal, the plaintiff "must offer relevant, competent evidence" establishing subject-matter jurisdiction. Id.; see also Banks v. United States, 741 F.3d 1268, 1277 (Fed. Cir. 2014) ("When reviewing a motion to dismiss for lack of subject matter jurisdiction, a court accepts only uncontroverted factual allegations as true . . . ."); Reynolds, 846 F.2d at 747 (explaining that, once subject-matter jurisdiction has been challenged, the "court may consider relevant evidence" to decide whether it has jurisdiction); Martinez v. United States, 48 Fed. Cl. 851, 857 (2001) (explaining that, when a "motion to dismiss for lack of subject matter jurisdiction challenges the truth of the jurisdictional facts in the complaint, the court may look beyond the pleadings to consider all available evidence").

B. This Court's Subject-Matter Jurisdiction over Patent Infringement Claims

Section 1498(a) of Title 28 of the United States Code allows a suit for monetary compensation "[w]henever an invention described in and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same." 28 U.S.C. § 1498(a). It further provides that, in such cases, "the owner's remedy shall be by action against the United States in the United States Court of Federal Claims." Id.

A two-part test is used to determine whether an infringing activity is "for the United States." IRIS Corp. v. Japan Airlines Corp., 769 F.3d 1359, 1362 (Fed. Cir. 2014) (citing 28 U.S.C. § 1498(a)). That test requires the plaintiff to show that the allegedly infringing activity was conducted: (1) "for the Government"; and (2) "with the authorization or consent of the Government." Id. (quoting 28 U.S.C. § 1498(a) and discussing the two-part test for establishing whether an activity "for the United States").

At step one, courts deem a third party's manufacture or use of a patented invention to be "for the Government" within the meaning of § 1498 when it is done "for the benefit of the government." Id. (quoting Advanced Software Design Corp. v. Fed. Rsrv. Bank of St. Louis, 583 F.3d 1371, 1378 (Fed. Cir. 2009)). This does not require a showing that the government was "the sole beneficiary" of the allegedly infringing activity. Advanced Software, 583 F.3d at 1378; see also Sevenson Env't Servs., Inc. v. Shaw Env't, Inc., 477 F.3d 1361, 1365 (Fed. Cir. 2007) ("The statute imposes no additional 'primary purpose' condition."). But the benefit the government receives from the activity must be more than merely "incidental." Advanced Software, 583 F.3d at 1379.

At step two, courts recognize that "[t]he government's authorization or consent may be either express or implied." IRIS Corp., 769 F.3d at 1362 (citing TVI Energy Corp. v. Blane, 806 F.2d 1057, 1060 (Fed. Cir. 1986)). For example, the government may give its authorization or consent to patent infringement by including in a contract "instructions, . . . specifications[,] or drawings which impliedly sanction and necessitate infringement." Hughes Aircraft Co. v. United States, 534 F.2d 889, 901 (Ct. Cl. 1976); cf. Carrier Corp. v. United States, 534 F.2d 244, 247–48 (Ct. Cl. 1976) (finding that the government did not authorize or consent to a contractor's use

of patented refuse containers because "neither the contract specifications nor any specific written instructions" required use of the containers, and non-infringing containers "were available in the open market [and] could have been purchased and used").

C. Whether Plaintiffs Have Established that the Accused Activities Were Undertaken for the Government and with Its Authorization or Consent

The government moves to dismiss Plaintiffs' claims as to the research institutions, whose allegedly infringing activities were carried out under government grants or cooperative agreements. See Def.'s Mot. at 4–14. It argues that Plaintiffs have not satisfied either of the two prerequisites to this Court's exercise of jurisdiction described above. For the reasons set forth below, the Court agrees.

1. Whether Plaintiffs Have Established that the Research Institutions' Allegedly Infringing Activities Were for the Benefit of the Government

Plaintiffs argue that the government reaped a benefit from the research institutions' activities because those activities were geared toward "develop[ing] fabrication techniques to manufacture and implement new cooling technologies to expand the processing capabilities of the United States military's computers, electronic weapons, and communication systems." Pls.' Resp. at 8; see also Am. Compl. ¶¶ 9, 16. Plaintiffs further argue that, because these activities were undertaken as a result of a DARPA initiative intended to strengthen national security, they were necessarily for the government's benefit. Pls.' Resp. at 9–10; see also Am. Compl. ¶ 13.

The government, for its part, contends that the activities the research institutions performed pursuant to grants or cooperative agreements are, by definition, not performed "for the government" within the meaning of § 1498. Def.'s Mot. at 6. It argues that this conclusion follows necessarily from statutory language that defines grants and cooperative agreements in domestic assistance programs as instruments whose "principal purpose" is to provide financial, technical, or other assistance to third parties to advance "a public purpose," and not to acquire "property or services for the direct benefit or use" of the government. Id. (citing 31 U.S.C. § 6304(1) (describing grants); 31 U.S.C. § 6305(1) (describing cooperative agreements)). Further, according to the government, in this case, the research institutions used their grants and cooperative agreements to conduct fundamental research, and not to develop actual systems that would promote national security. See Def.'s Reply at 4–6; see also App. To Def.'s Mot. at 82, 97, 129, 145, 161, 177 (grants and cooperative agreements stating that "DARPA expects the work performed under this agreement to be fundamental research").

At the outset, the Court notes its disagreement with the government to the extent that it contends that activities performed pursuant to grants or cooperative agreements are, by definition, not performed "for the government" within the meaning of § 1498. The Federal Circuit has acknowledged that government research grants—like government contracts—"may authorize the necessary predicates for § 1498(a)." Madey v. Duke Univ., 307 F.3d 1351, 1360 (Fed. Cir. 2002). Moreover, it is well established that an accused activity may be "for the government" even if the activity's primary purpose is not to benefit the government. Sevenson,

477 F.3d at 1365; cf. Advanced Software, 583 F.3d at 1378 ("It is not necessary to be the sole beneficiary . . . in order to be a beneficiary for the purposes of § 1498(a)."). [5]

Nonetheless, the fact that the research institutions' activities were funded through grants and cooperative agreements does cast doubt on Plaintiffs' allegations that they were undertaken for the benefit of the government. Yet Plaintiffs have not come forward with competent and relevant evidence to show how the government benefitted from the activities of the research institutions or even what the research institutions actually did. See Pls.' Resp. at 8–12.

Instead, Plaintiffs cite provisions of the cooperative agreements that represent that the government will have "substantial involvement" in the research institutions' activities. Id. at 8 (citing App. to Def.'s Mot. at 72, 103, 119, 135, 151, 167). Presumably, they cite these provisions to show that any activities the institutions conducted would be for the government's benefit. See id. But, to begin with, the cooperative agreements on which Plaintiffs rely relate only to ICECool Fundamentals, see App. to Def.'s Mot. at 70, 101, 117, 133, 149, 165, and Plaintiffs conceded at oral argument that their claims are directed not to work performed for ICECool Fundamentals but, rather, to ICECool Applications, Oral Arg. at 37:47–38:00. And, in any event, Plaintiffs have not offered evidence of what "involvement" the government actually had in the research institutions' activities, nor how the government shaped those activities for its benefit within the meaning of § 1498. See Pls.' Resp. at 8–9.

Plaintiffs also rely upon select slides from the DARPA presentation to support their allegations that the research institutions were "fabricating physical processors with ICECool thermal cooling designs provided by DARPA." Id. at 10–11 (citing App. to Def.'s Mot. at 247–48). Similarly, Plaintiffs contend that at least one research institution, the University of Maryland, was "fabricat[ing] and testing . . . a prototype microchannel/microgap combined cooler." Pls.' Resp. at 10 (quoting App. to Def.'s Mot. at 21); see also App. to Def.'s Mot. at 1, 20–21. This shows, Plaintiffs argue, that the research institutions were directly serving the government's interests in improving military technology, rather than merely performing fundamental research. Pls.' Resp. at 10–11.

But the slides in the record list only one research institution, Georgia Tech Research Corporation, under ICECool Applications, the phase of the ICECool program relevant to Plaintiffs' claims. See id. at 11 (citing App. to Def.'s Mot. at 247–48). Additionally, the Court cannot determine from the slides—which are necessarily truncated because they were almost certainly meant to be part of an oral presentation—whether the research institutions fabricated anything, let alone whether any systems they fabricated benefited the government within the meaning of § 1498. See App. to Def.'s Mot. at 247–48. Nor can the Court determine from the

[5] The government relies extensively on the nonbinding case Golden v. United States, 137 Fed. Cl. 155 (2015), for the proposition that the statutory descriptions of grants and cooperative agreements foreclose the possibility that activities conducted pursuant to those instruments can be for the government. See Def.'s Mot. at 8, 12–13; Def.'s Reply at 5, 7, 10–11. The Court disagrees with that reading of Golden and, in any event, rejects that proposition for the reasons set forth in the text. See, e.g., Golden, 137 Fed. Cl. at 177–81.

University of Maryland's statement of work whether it fabricated a prototype cooling system and, if so, whether that system benefited the government. See App. to Def.'s Mot. at 19–21.

Finally, Plaintiffs argue that provisions in the grants and cooperative agreements that give the government rights in the research institutions' data and inventions provide a benefit to the government within the meaning of § 1498. See Pls.' Resp. at 11–12; see also, e.g., App. to Def.'s Mot. at 9, 82–83. Again, many of the provisions Plaintiffs cite are found in cooperative agreements related to ICECool Fundamentals and are therefore irrelevant to Plaintiffs' claims. See App. to Def.'s Mot. at 82–83, 113–14, 129–30, 145–46, 161–62, 177–78.

Moreover, the Court fails to see how these provisions establish that the research institutions' activities were for the government. As noted above, this Court's jurisdiction over patent infringement claims is limited to instances when a patented invention "is used or manufactured by or for the United States." 28 U.S.C. § 1498(a). The provisions in the grants and cooperative agreements giving the government rights to the research institutions' data, see App. to Def.'s Mot. at 9, 98, which the pertinent regulation defines as "recorded information," 48 C.F.R. § 27.401, is wholly insufficient to establish either that the research institutions used or manufactured Plaintiffs' inventions or, if so, that such manufacture or use was for the government. Likewise, the standard patent rights clause incorporated into many of the grants and cooperative agreements gives the government license to use the research institutions' patentable inventions. See, e.g., App. to Def.'s Mot. at 98 ("Rights in Technical Data, Computer Software, and Copyright"); see also 37 C.F.R. § 401.14 ("Standard patent rights clauses"). The Court, however, cannot infer from this clause that the research institutions created patentable inventions and, if they did, that the government exercised its right to use the inventions for its benefit. See 37 C.F.R. § 401.14.

In sum, there is a dearth of competent evidence (or even allegations) about the specific activities that the research institutions performed under the grants and cooperative agreements. There is no evidence regarding how their activities were used to benefit the government—only a general assertion that programs funded by DARPA must necessarily be "for the government" because DARPA's mission is to promote national security. Therefore, Plaintiffs have not met their burden of showing that it is more likely than not that the research institutions' allegedly infringing activities were undertaken "for the government" within the meaning of § 1498.

2. Whether the Research Institutions Acted with the Government's Authorization or Consent

As described above, to establish this Court's jurisdiction over the allegedly infringing activities of the research institutions, Plaintiffs must establish not only that the activities benefited the government but also that they were undertaken with its authorization or consent (either express or implied). See 28 U.S.C. § 1498(a). Plaintiffs in this case do not contend that the government expressly authorized or consented to any infringing activities by the research institutions. See Pls.' Resp. at 13. Instead, they argue that the government provided "detailed technical instructions" and a common "ICECool design," both of which "impliedly sanctioned and necessitated infringement." Id.

At the outset, the Court rejects the government's argument that certain terms and conditions specified in the grants and cooperative agreements refute any argument Plaintiffs might make that the government authorized or consented to the research institutions' infringement of Plaintiffs' patents. See Def.'s Mot. at 10–13. The cited provisions state, for example, that the government "cannot assume any liability for accidents, illnesses or claims arising out of any work supported by an award or for unauthorized use of patented or copyrighted materials." App. to Def.'s Mot. at 202; see also id. at 227. Likewise, the regulations that are incorporated into the grants and cooperative agreements state that an awardee's costs "incurred in connection with patent infringement litigation[] are unallowable." See Def.'s Mot. at 11–12 (quoting 2 C.F.R. § 200.435(h)).

These disclaimers are not inconsistent with a finding that the government has implicitly authorized an awardee's infringing activities. Instead, they define the government's responsibility to an awardee against which a patent-related claim is asserted. Indeed, to the extent that the agreements disclaim liability "for unauthorized use" of patented inventions, App. to Def.'s Mot. at 202, they mirror the limitations on the government's liability imposed by § 1498, which waives the government's sovereign immunity as to a third party's use of a patented invention only when the government has authorized or consented to such use, see 28 U.S.C. § 1498(a).

Nonetheless, Plaintiffs' assertions that the government's authorization or consent can be implied by necessity are unavailing because they are not supported by relevant and competent evidence. Plaintiffs rely primarily upon language in the statement of work attached to the University of Maryland's grant award (which the government supplied with its motion to dismiss). Pls.' Resp. at 13 (citing App. to Def.'s Mot. at 19–21). The statement of work provides that the University would validate methods of cooling electronic components "through the fabrication and testing of a prototype microchannel/microgap combined cooler." App. to Def.'s Mot. at 20. The statement of work further states that "microchannels shall be located under the high power regions, while the rest of the chip shall be cooled by a microgap cooler." Id.

Plaintiffs provide the Court with no basis for finding that these statements equate to instructions that required the research institutions to infringe Plaintiffs' patents. Instead, as the government observes, the statement of work appears to provide only a "high-level description of the objectives of the" University's research under the ICECool program. Def.'s Reply at 13 (citing App. to Def.'s Mot. at 19–21). It does not specify the details of the "prototype microchannel/microgap combined cooler" that the University of Maryland was tasked with developing. App. to Def.'s Mot. at 20–21. Rather, it includes only a general requirement that the University place "microchannels . . . under the high power regions" and use a "microgap cooler" for "the rest of the [system]." Id. at 20. Without more, the short and inexact descriptions in the statement of work are insufficient to establish by a preponderance of the evidence that "the specifications [of the prototype] cannot be met without infringing on a patent." See Larson v. United States, 26 Cl. Ct. 365, 370 (1992).

Plaintiffs also cite the DARPA slides discussed above, which they say depict a common ICECool design that the government provided to the research institutions and that required infringing Plaintiffs' patents. Pls.' Resp. at 13 (citing App. to Def.'s Mot. at 240). The Court cannot say, however, that the rudimentary graphic that Plaintiffs highlight in the DARPA slides

depicts a common "conceptual ICECool design" that DARPA allegedly provided to the research institutions. See id.; see also App. to Def.'s Mot. at 236, 240. And even if the Court could determine that the graphic represented a common design, Plaintiffs have provided no competent evidence that explains how the allegedly common design necessitated infringement. See Pls.' Resp. at 13.

Finally, the Court notes that only two of the grants in the record even include statements of work. See App. to Def.'s Mot. at 19–21, 40–42. Plaintiffs have produced virtually no evidence of the other research institutions' activities, and certainly not the kind of detailed instructions or specifications that could support finding that the government consented to the alleged infringement.

Given the foregoing discussion, the Court concludes that Plaintiffs have not met their burden of establishing the Court's subject-matter jurisdiction over the claims related to the research institutions. Accordingly, the government's motion to dismiss those claims must be granted.[6]

II. The Government's Motion to Dismiss for Failure to State a Claim

The government moves under RCFC 12(b)(6) to dismiss Plaintiffs' claims related to all but two of the defense contractors and research institutions named in the Amended Complaint. See Def.'s Mot. at 15–20.[7] Because the Court has determined that it lacks subject-matter jurisdiction over Plaintiffs' claims related to the research institutions, however, it considers the government's motion under RCFC 12(b)(6) with respect to the defense contractors only.

Under RCFC 12(b)(6), a complaint is subject to dismissal "when the facts asserted by the claimant do not entitle him to a legal remedy." Lindsay v. United States, 295 F.3d 1252, 1257 (Fed. Cir. 2002). To avoid dismissal on this basis, "a complaint must contain sufficient factual matter, accepted as true, to 'state a claim to relief that is plausible on its face.'" Ashcroft v. Iqbal, 556 U.S. 662, 678 (2009) (quoting Bell Atl. Corp. v. Twombly, 550 U.S. 544, 570 (2007)).

The Federal Circuit has held that it is appropriate in patent infringement cases to use a "notice and plausibility" standard to evaluate the sufficiency of complaints. K-Tech Telecomms., Inc. v. Time Warner Cable, Inc., 714 F.3d 1277, 1286 (Fed. Cir. 2013) ("The touchstones of an appropriate analysis [of the sufficiency of a complaint] are notice and facial plausibility."); JG

[6] The government also argues that the Court lacks jurisdiction over Plaintiffs' claims related to Universität Ulm, a research institution based in Germany, because those claims "arise in a foreign country." Def.'s Mot. at 14 (citing 28 U.S.C. § 1498(c)). Because the Court determines that Plaintiffs have not met their burden of establishing the Court's subject-matter jurisdiction over the alleged activities of the research institutions—including Universität Ulm—under 28 U.S.C. § 1498(a), the Court does not decide whether it lacks jurisdiction over Universität Ulm's activities by operation of § 1498(c).

[7] The government does not move to dismiss Plaintiffs' claims related to IBM and Lockheed Martin. Def.'s Mot. at 15 n.6; see also Am. Compl. ¶¶ 28–32, 52–55.

Techs., LLC v. United States, 156 Fed. Cl. 691, 710 (2021) ("[T]he Federal Circuit has established a 'notice and plausibility' standard . . . .").

To pass muster under that standard, a complaint must be facially plausible and must "place the alleged infringer 'on notice of what activity . . . is being accused of infringement.'" Bot M8 LLC v. Sony Corp. of Am., 4 F.4th 1342, 1352 (Fed. Cir. 2021) (alteration in original) (quoting Lifetime Indus., Inc. v. Trim-Lok, Inc., 869 F.3d 1372, 1379 (Fed. Cir. 2017)); see also K-Tech Telecomms., 714 F.3d at 1284 ("[A] patentee need only plead facts sufficient to place the alleged infringer on notice as to what he must defend." (quoting McZeal v. Sprint Nextel Corp., 501 F.3d 1354, 1357 (Fed. Cir. 2007))). It is not necessary for a plaintiff to identify allegedly infringing systems by name to meet the notice and plausibility standard. See K-Tech Telecomms., 714 F.3d at 1286 ("We do not read Form 18 [of the Appendix of Forms to the Federal Rules of Civil Procedure] . . . to require that a plaintiff identify an accused device by name.").[8]

The government argues that Plaintiffs' allegations against the defense contractors are insufficient to state a claim because the Amended Complaint "fail[s] to specify . . . real-world system[s] accused of infringement." Id. at 15. The Court agrees with the government that Plaintiffs' allegations concerning the systems the defense contractors developed in conjunction with the ICECool program lack detail. Nonetheless, the Court finds that the Amended Complaint contains sufficient information to put the government on notice of the activities Plaintiffs claim resulted in infringement of their patents. Further, because those claims are facially plausible, they are sufficient to survive the government's motion to dismiss under RCFC 12(b)(6).

The Court finds the court of appeals' decision in K-Tech Telecommunications instructive. See 714 F.3d at 1285–87. There, the plaintiff alleged that the defendant television service providers used its patented inventions "to update . . . digital [television] signals." Id. at 1286. The plaintiff did not identify specific accused devices. Id. The Federal Circuit held the allegations sufficient to survive a motion to dismiss where the defendants "kn[e]w what K-Tech's patents claim[ed]," and where K-Tech alleged that the defendants "modif[ied] or 'translate[d]' digital signals they receive[d] . . . using K-Tech's patented methods and systems." Id. at 1287.

[8] Form 18 provided a sample complaint for patent infringement that "illustrate[d] the simplicity and brevity that [the Federal Rules of Civil Procedure] contemplate." Fed. R. Civ. P. 84 (2007) (abrogated Dec. 1, 2015). Under Form 18's sample complaint, a plaintiff could satisfy the pleading standard by accusing the defendant's "electric motors" of infringement. See K-Tech Telecomms., 714 F.3d at 1283–85. Although Form 18 has been abrogated, its pleading standard remains applicable. See Fed. R. Civ. P. 84, advisory committee's note to 2015 amendment ("The abrogation of Rule 84 does not alter existing pleading standards . . . ."); see also Lifetime Indus., 869 F.3d at 1377 (explaining that the Federal Circuit has "never recognized" "a difference between the requirements of Form 18 and Iqbal / Twombly"); JG Techs., 156 Fed. Cl. at 711 n.12 ("The Federal Circuit . . . has not recognized a distinction between the pleading standard of Form 18 and Iqbal/Twombly.").

By contrast, in 3rd Eye Surveillance, LLC v. United States, the court found that the plaintiffs' allegation that the government used "infringing surveillance systems" "provide[d] insufficient notice of allegations of infringement." 124 Fed. Cl. 438, 440, 443 (2015). The court explained that "[t]he government employs countless 'surveillance systems' worldwide," and that it was "unreasonable for the government to bear the burden of searching all these systems" for potential infringement, especially given the "breadth and complexity of the . . . asserted patents." Id. at 443 (internal quotation marks omitted); see also Artrip v. Ball Corporation, 735 F. App'x 708, 715 (Fed. Cir. 2018) (finding infringement allegations insufficient where they identified the allegedly infringing machines only with "broad functional language").

This case is more like K-Tech Telecommunications than it is like 3rd Eye Surveillance. The Amended Complaint focuses on activities undertaken pursuant to a single government program: ICECool. See Am. Compl. ¶ 9. It does more than identify the accused systems with "broad functional language," e.g., by claiming only that the systems are used to cool electronic circuitry. See Artrip, 735 F. App'x at 715. Instead, the Amended Complaint identifies the specific technique employed to perform that function, namely, the use of "convective or evaporative microfluidic cooling installed directly onto the electronic devices." Am. Compl. ¶ 14. Plaintiffs also incorporate their patents into the Amended Complaint, so the government knows what the patents claim. Id. ¶¶ 2–3; see also Am. Compl. Exs. A, B. These allegations, taken together, put the government "on notice as to what [it] must defend," see K-Tech Telecomms., 714 F.3d at 1284 (quoting McZeal, 501 F.3d at 1357), and do not require the government to undertake a boundless search for potentially infringing systems, see 3rd Eye Surveillance, 124 Fed. Cl. at 443.

In addition, the Amended Complaint identifies as exemplars four systems developed under the ICECool program that allegedly infringe Plaintiffs' patents. Am. Compl. ¶¶ 28–32, 44–55. The government challenges the sufficiency of the claims based on two of these examples, those belonging to Northrop Grumman and Raytheon, arguing that the examples rely on descriptions in United States patents and images of virtual cooling systems from the 2015 DARPA presentation, and therefore do not depict "functional real-world cooling systems." Def.'s Mot. at 19 (citing App. to Def.'s Mot. at 241–42); see also id. at 18–20 (citing Am. Compl. ¶¶ 44–51). But these arguments about what the drawings and descriptions mean are premature. The Court recognizes that Plaintiffs cannot prove their case through descriptions in patents and slideshow images alone. See Demodulation, Inc. v. United States, 126 Fed. Cl. 499, 507 (2016) ("[T]he existence of a patent is no guarantee of the existence of a corresponding product . . . ."). At the pleading stage, however, the specific descriptions from the patents and the slideshow images provide additional information giving notice as to what systems Plaintiffs accuse of infringement.

Moreover, Plaintiffs allude to a scarcity of publicly available information about the allegedly infringing systems as a reason why they cannot yet provide greater specificity regarding those systems. See Am. Compl. ¶¶ 36–37, 58–59. Plaintiffs allege "[o]n information and belief" that the defense contractors developed "unidentified products that . . . are deemed sensitive to national security." Id. ¶ 36; see also id. ¶ 58. Information about these systems "is restricted at this time," Plaintiffs allege, id. ¶¶ 36, 58, but may be identified "after a reasonable opportunity for discovery," id. ¶¶ 37, 59.

Plaintiffs' explanation strikes the Court as plausible. Plaintiffs allege that the technology developed in the ICECool program is meant "to improve our national security," id. ¶ 13, and that the government tasked the defense contractors with "develop[ing] microfabrication techniques to implement infringing ICECool designs into existing military systems," id. ¶ 16. The Court can reasonably infer from these allegations that at least some of the allegedly infringing systems may have been incorporated into military technology. The Court can also infer, therefore, that Plaintiffs may not be able to identify these systems more precisely without discovery. See K-Tech Telecomms., 714 F.3d at 1286 (explaining that, when a specific accused device "is not ascertainable without discovery," a plaintiff may nonetheless file a complaint).

Having found that the Amended Complaint sufficiently identifies the allegedly infringing systems, the Court further finds that the Amended Complaint states "a claim for relief that is plausible on its face." See Twombly, 550 U.S. at 570. Plaintiffs allege that the government partnered with the defense contractors "to develop next-generation military electronics thermal management systems," Am. Compl. ¶ 9, including "advanced electronics cooling techniques" that use "convective or evaporative microfluidic cooling installed directly onto the electronic devices," id. ¶ 14. Plaintiffs further allege that the defense contractors acted at the government's direction to help incorporate infringing technology "into existing military systems," id. ¶ 16, as part of the government's overall effort "to improve our national security," id. ¶ 13. Taking these allegations as true, the Court finds it not implausible that the accused systems, which allegedly used "microfluidic cooling," infringed Plaintiffs' patents, see Am. Compl. ¶ 14; see also Am. Compl. Exs. A, B.

In short, Plaintiffs' allegations that the defense contractors participating in the ICECool program developed and supplied the United States with systems that infringe Plaintiffs' patents are sufficient to state a claim under the notice and plausibility standard. The government's motion to dismiss those claims under RCFC 12(b)(6) must therefore be denied.

CONCLUSION

For the foregoing reasons, the government's partial motion to dismiss, ECF No. 12, is **GRANTED-IN-PART** and **DENIED-IN-PART**. The government's motion to dismiss Plaintiffs' claims related to the research institutions pursuant to RCFC 12(b)(1) is **GRANTED**, and those claims are **DISMISSED** without prejudice. The government's motion to dismiss Plaintiffs' claims related to the defense contractors in accordance with RCFC 12(b)(6) is **DENIED**. The parties shall file a joint status report by **May 9, 2022**, in which they propose a schedule for discovery related to the claims remaining in this case.

IT IS SO ORDERED.

s/ Elaine D. Kaplan
ELAINE D. KAPLAN
Chief Judge