

ZMATION, INC., and CRAIG D. HOWARD and JUDY A. BURCHAM-HOWARD, Plaintiffs,
v.
DEPARTMENT OF REVENUE, State of Oregon, Defendant.

No. TC-MD 210293N.

Tax Court of Oregon, Magistrate Division, Income Tax.

March 17, 2022.

DECISION

ALLISON R. BOOMER, Presiding Magistrate.

Plaintiffs appealed Defendant's Notices of Assessment, dated March 17, 2021, for the 2016 and 2017 tax years. A trial was held remotely on September 8, 2021. Craig D. Howard (Howard), president and shareholder of Zmation, appeared and testified on behalf of Plaintiffs. Steven L. Weiland (Weiland), CPA, also testified on behalf of Plaintiffs. Michael Phillips, tax auditor, appeared on behalf of Defendant. Plaintiffs' Exhibits 1 to 36 and Defendant's Exhibits A to I were received without objection.

I. STATEMENT OF FACTS

Zmation "is engaged in the business of designing, fabricating, assembling and testing custom industrial machines from scratch." (Ex 1 at 1.) It often integrates "computers, machine vision, closed loop processes (force, temperature, etc.), lasers, and robotics in [its] systems to solve [its] customers process requirements." (Exs 3 at 1, 4 at 1.) Zmation "only takes the [research tax] credit on a limited number of projects where there is a research component." (Ex 17.) It claimed six qualified projects in 2016 and eight qualified projects in 2017. (*Id.*) For the 2016 and 2017 tax years, Zmation claimed the research tax credit based on hours that four engineers worked on the claimed projects. (See Exs 4, 5.) Those engineers were Howard, a Project Engineer, as well as a Design Engineer, a Software Engineer, and a Controls Engineer. (*Id.*) Plaintiffs summarized Zmation's qualified research activities with three categories:

- Pilot model: Zmation experiences uncertainty "regarding the appropriate design of the machine, and particularly whether features desired by the customer can be designed and integrated into a functional machine" so it produces "a model that is used to evaluate and resolve the uncertainty concerning the appropriate design." (Ex 16.) "After uncertainty is eliminated, Zmation incurs additional expenses to produce the machine for sale to the customer based on the appropriate design." (*Id.*) Zmation claims expenses associated with producing a model, not with producing the machine for sale to a customer. (*Id.*)
- Product component redesign: Zmation claims expenses associated with redesigning a component of a machine that fails during quality control testing. (*Id.*)
- Development of a new component: Zmation "contracts with businesses that want to improve a machine for use in [their] trade or business" and claims the engineering costs to "produce a model for the new component that is used to eliminate uncertainty regarding the development of the new component * * *." (*Id.*)

Plaintiffs described Zmation's process of experimentation in its qualified research activities:

"At the start of a project we come to an agreement with our customer as to what the custom industrial machine will look like and how it will function in order to meet their detailed list of specifications. When the custom industrial machine is built we begin testing the machine. The testing of the machine represents the start of the scientific method. Zmation or the customer may observe parts of the machine that do not function to the specifications. Zmation then researches the malfunctioning parts, informally proposes hypotheses to the problem, tests the hypotheses, analyzes the data and fixes the malfunctioning parts at their own expense until the customer's specifications are met."

(Ex 35 at 1-2.) Plaintiffs provided email chains between Zmation and its purchasers to demonstrate that it was engaged in research. (Exs 22-32.) The email chains include numerous references to "testing" as well as progress reports, updates, and schedule changes. (See, e.g., Ex 23 at 11, 22-23, 64-77; Ex 24 at 31-35, 39 (discussion of "testing").) Plaintiffs also provided Howard's engineering notebook with 231 pages of handwritten notes. (Ex 34.)

A. Projects for which Plaintiffs Claimed Qualified Research Activities

Plaintiffs provided summaries of each project for which Zmation claimed qualified research activities. (See Exs 3, 5.) Some projects spanned the two years. (See *id.*) Those projects, including their "R&D Challenges," are as follows:

- Angle Saturation SS Pins involved developing "CNC machining process parameters for SS pin retrofit." (Ex 3 at 3-4.)
- Label Print & Apply System Prototype involved "software development of color vision inspection" and of "color lookup targets for varying light conditions." (Ex 3 at 5-7.)
- Graft Welder System Retrofit involved replacing "existing proprietary amplifier chassis with standard amplifiers"; rewriting "software to run on Windows 10"; and integrating "new motion controllers supported under Windows 10" and "new force sensor PCI card to PCIE slot." (Ex 3 at 7-8, 5 at 4.)
- Benchtop Slide Handling System involved developing "stand alone Zmation Controller" and "processes to separate a slide from stack of slides"; detecting "stuck slides"; and inserting "separated slides into racks." (Exs 3 at 9-10, 5 at 5-6.)
- Chassis Inspection System involved integrating "FANUC robot into Z-UAL software," "Cognex vision into Windows 10 Z-UAL," "OCR, OCV, and multiple image vision inspection capability into Z-UAL," "customer provided light curtains with muting capability," and "customer provided barcode scanner"; and developing "easily modified flexible Chassis inspection software" and "large [six] axis inverted frame with conveyor pass through." (Exs 3 at 11-12, 5 at 8.)
- Semi Auto Winder System involved developing "programmable suture tensioning mechanism," "programmable suture winding mechanism, and "flap closing mechanism." (Exs 3 at 13-14, 5 at 10.)
- Triple Cassette Systems involved replacing "master PLC and touch screen"; rewriting "obsolete PLC ladder logic and touch screen code" and "serial communications interface to existing wafer handling robot"; designing "a new wafer cassette tilt mechanism" and "a right hand and left hand version of the new robot cell"; adding a "second wafer handling robot with [three] wafer cassette tilt mechanisms," "secondary serial communications to new robot," and "additional sensors for wafer tracking"; and integrating "wafer tracking and RFID capability into MES system." (Exs 3 at 15-16, 5 at 12.)
- Triton Aperture Automation involved developing "large removable tooling fixtures with moveable precision parts," "large vacuum curing station," "high precision [two] part dispensing," "precise off axis tilt motion mechanism," "PSA removal process for multiple parts," two "different cleaning stations," and "[s]tatic control via ionizers for PSA removal;" and integrating "iterative vision alignment processes" and "14 or more USB cameras." (Exs 3 at 17-18, 5 at 14.)
- LCR Test Selector Boxes involved "reverse engineer[ing] existing test box" and designing "a new test box to control new LCR tester with new electrical interface." (Ex 3 at 19-20.) Zmation recommended that the LCR test boxes "be as similar as possible to previous units." (Ex 8 at 123.)
- VIT Force Probe involved developing "fixtures for newly designed part"; upgrading "existing software and hardware to support Windows 10"; and integrating "to newly designed customer part controller." (Ex 5 at 15-16.)
- Bending Cover Tying Machine involved developing "string winding process for different part diameters," "string tensioning mechanism," and "nonlinear footswitch speed control of string winding process"; and designing "generic fixture for multiple different part diameters." (Ex 5 at 17-18.)

B. Project Contracts

Plaintiffs supplied all Zmation's contracts for its claimed projects. (Ex 8.) Each of the contracts except for The Triple Cassette Loaders included a standard one-page document entitled "terms and conditions." (See *id.* at 3, 14, 30, 39, 44, 55, 115, 125, 132, 140.) The standard terms and conditions document included the following clauses:

- "Payment Terms" requiring purchaser to pay invoices within 30 days of invoice date.
- "Changes and Cancellations" stating "purchaser may request that orders be rescheduled or canceled only by written request. All such requests shall be subject to acceptance by Zmation." Rescheduling or cancellation requests received within 30 days of the scheduled shipping date may be rejected as untimely by Zmation or "subject to payment of a rescheduling or cancellation charge * * *."
- "Title, Risk of Loss and Security Interest" stating that "title to software products and all copies thereof shall remain Zmation's or others from whom Zmation has obtained a licensing right."^[1]
- "Limited Warranty" giving purchaser one-year warranty that "products shall be free from defects in material or workmanship under normal use and conditions." Zmation's "obligations * * * are limited solely * * * to correcting any of said defects provided, however, that Zmation may, at its option, either replace the product or repair it at its facility or a designated authorized repair location. * * * Zmation's determination as to whether a defect in material or workmanship exists shall be final." "In the event the failure of the product is not due to any of the foregoing, Zmation will make repairs at a nominal cost to the original consumer Purchaser."
- "Copyrighted Materials" stating that, "unless otherwise specified, Zmation copyrighted materials (software and printed documentation) may not be copied except for archive purposes, to replace a defective copy, or for program error verification by Purchaser".

(See, e.g., *id.* at 3.)

Many of the contracts or quotations give a total price for the machine, evidently inclusive of physical components, engineering, and other costs. (Ex 8 at 2, 38, 43, 114, 124, 131, 139.) Those that separate engineering costs are described below. Several contracts state that software will be programmed in Zmation's "proprietary Universal Automation Language (UAL)." (See *id.* at 8, 36, 42, 111.) Those contracts distinguish between the "source code," which remains Zmation's property, and "process scripts" that are the purchaser's property. (See *id.* at 8, 31, 36, 42, 111.) Several contracts include payment schedules or clauses that require final payment — typically 10 or 20 percent of the contract price — following a site or factory "acceptance test" by the purchaser. (See *id.* at 13, 22, 25, 29, 38, 43, 54, 69, 114, 131, 139.^[2]) Additional relevant contract terms for specific projects are set forth below.

1. Label Print & Apply System

The purchaser's "Equipment Specification" document describes three design concepts in order of the purchaser's preference. (Ex 8 at 17-18.) It includes an "Equipment Validation Process" requiring Zmation to "demonstrate in their facility" to the purchaser that the equipment is capable of performing certain specified functions "before the machine is to be shipped to [the purchaser] for final validation." (*Id.* at 21-22.) The "Equipment Target Cost & Payment Terms" clause separately lists the "targeted budget for the first complete print/attach system * * * including the engineering design cost to develop the equipment system" from the "budget for additional complete systems." (Ex 8 at 22.) The first is \$250,000 and the subsequent are \$200,000. (*Id.*) Similarly, Zmation's quotation refers to a "prototype label print & apply system" and then "follow on" systems. (*Id.* at 13.) It quotes \$56,500 in engineering costs out of a total price of \$590,500. (*Id.*) A Purchase Order references "R&D Engineering costs" of \$6,500 and "Engineering costs" of \$50,000 for a total of \$56,500. (*Id.* at 25.)

2. Graft Welder System Retrofit

Zmation's quotation lists the items purchased as "computer hardware upgrades, software upgrades, amplifier upgrades, [and] opto 22 upgrades." (Ex 8 at 29.) An "Intellectual Property" clause states that Zmation "shall own all right, title, and interest in and to the Base Code" and, upon delivery, acceptance, and final payment,

"all right, title, and interest in and to the Custom Code, including without limitation all Intellectual Property Rights therein, shall immediately vest in purchaser [and Zmation] shall not disclose the Custom Code to

any third party and shall not incorporate the Custom Code into any products or software for any third party.

"To the extent the Custom Code qualifies as a 'work made for hire' under applicable copyright law, it shall be considered a 'work made for hire' and it shall be owned exclusively by purchaser ***. To the extent the Custom Code does not qualify as a 'work made for hire' *** or gives rise to Intellectual Property Rights other than copyrights, [Zmation] hereby irrevocably transfers, assigns, and conveys to Purchaser all of [Zmation's] worldwide right, title, and interest in and to the Custom Code ***."

(*Id.* at 32-33.)

3. Chassis Inspection System

Plaintiffs highlighted a cancellation clause stating that the purchaser may cancel "in whole or in part at any time upon the occurrence of [Zmation's] breach of this Purchase Order or a finding of default and other certain events" including insolvency. (Ex 8 at 49.) In case of such cancellation, the purchaser "shall incur no liability after giving written notice of the cancellation." (*Id.*) "Upon notification of cancellation, [Zmation] will provide a complete cancellation cost analysis and shall immediately notify [purchaser] of any anticipated cancellation costs." (*Id.*) The purchaser may also cancel without cause at its discretion, in which case its "liability shall not exceed the full price of Products already manufactured to meet scheduled Delivery Dates." (*Id.*) "Upon cancellation of software or services orders, [purchaser] shall only be liable for the price of the work that has been completed as of the date of cancellation notice." (*Id.*)

4. Semi Auto Winder System

The purchaser here is the same as the label print and apply system and provided a similar document detailing the equipment specifications as described in section 1. (Ex 8 at 57.) Unlike the prior contract, it does not distinguish between the first and subsequent machines. (See *Id.* at 64.) It gives the same price quote for each of eight machines. (*Id.*) Zmation's quotes \$383,000 for eight semi-automatic winder systems and \$53,000 for engineering design. (*Id.* at 54.)

5. Triple Cassette Loaders

Zmation quoted \$235,750 for four triple cassette loaders; \$24,000 for software; and \$7,000 for installation/training. (Ex 8 at 69.^[3]) The purchaser provided a Technical Specification document. (*Id.* at 71-86.) The purchaser was required to make payments within 10 days after fulfillment of payment requirements, which were specified in a partial payment plan with 11 steps, eight of which were factory acceptance or site acceptance tests for four tools. (*Id.* at 95.) Plaintiffs highlighted the cancellation clause, which gave purchaser the right to terminate the contract at any time "without giving reasons." (*Id.* at 97.) "In the case of such cancellation, [purchaser] owes [Zmation] only compensation for the proven effort until the date of cancellation." (*Id.*) Plaintiffs highlighted another cancellation clause in the purchaser's "Instructions and Conditions" document, stating that "Purchaser may revoke this purchase order by any means of communication at any time prior to receipt of [Zmation's] written acceptance." (*Id.* at 107.) That clause further states that "Purchaser shall pay [Zmation] on account of such cancellation such sum as may be agreed upon by purchaser and [Zmation] or, in the event of failure to reach such an agreement, such sum as may be otherwise lawfully determined to be owing to [Zmation] on such account." (*Id.*)

6. Triton Automated Aperture Assembly System

The purchaser here is the same as for the chassis inspection system and its contract includes the same cancellation clause described above in section 3. (See Ex 8 at 119.) Plaintiffs provided a demand letter from the purchaser requesting the return of all money it had paid to Zmation: \$613,900 on a contract with a total price of \$877,000. (Ex 33.) The letter alleges that Zmation failed to deliver on its promise "for the development and production of the Triton Automation Product" noting significant delays and "many substantiated failures" based on "specific non-conformities." (*Id.* at 1.)

7. Bending Cover Tying Machine

Zmation's quote lists a "prototype" machine for \$24,750, one machine for \$18,750, and more than four machines for \$14,950. (Ex 8 at 139.) The purchaser's "terms and conditions" document includes an "acceptance" clause that states Zmation's "commencement of work on the goods or commencement of performance of the services subject to this purchaser order or shipment of the goods, whichever occurs first, shall be deemed an effective mode of acceptance of this purchase order." (Ex 8 at 142.) It further allows the purchaser to terminate the purchase order "for cause" if Zmation "fails to comply with any of the terms and conditions" of the order. (*Id.*) In the event of termination for cause, the purchaser is not liable to Zmation for any amount. (*Id.*)

C. Defendant's Audit and Conference

Defendant's auditor disallowed Plaintiffs' research tax credit for two reasons: 1) under IRC section 41(g), a shareholder in an S corporation cannot claim the research tax credit when the business reports a loss, rather, the shareholder "can only claim a research credit for the tax attributable to the taxable income from the business"; and 2) Zmation's research was "funded" and therefore is not qualified research under Treas Reg § 1.41-4A. (Ex H at 2-3.) Although the auditor agreed that Zmation "retain[ed] rights to the software portion of the product," the auditor concluded that the purchasers "indirectly" paid for the software research because they paid for the machines, which required the software to run. (*Id.* at 3.)

At conference, the officer concluded that Zmation was "not conducting 'research' as defined by IRC [section] 41(d)." (Ex D at 7.) Rather, Zmation produced "product[s] that involve[d] research as a part of the contract" — namely, the software. (*Id.*) Because the machines could not function without Zmation's software, it was "not appropriate to separate the software from the rest of the machine to qualify for the research credit." (*Id.*) Even assuming Zmation's software development was qualified research, those costs were not separated from other costs. (*Id.*) "[T]he hardware components are the most significant costs listed in [Zmation's] contracts, [so] it is hard to conclude [Zmation was] conducting research of any kind, but rather, building custom equipment for [its] customers." (*Id.*) The officer concluded that Zmation's activities were not "experimental in nature," nor did Zmation establish that "substantially all" of its activities for which the credit was claimed constituted a "process of experimentation." (*Id.* at 7-8.) The officer concluded that Zmation did not meet the "discovery test" because it failed to prove that its equipment was new. (*Id.* at 8.)

D. Parties' Positions

Plaintiffs claim that Zmation conducted qualified research, not only with respect to its software but with the machines it built. Plaintiffs maintain that Zmation's contracts demonstrate that it retained rights to its research, not only in the software but also in "the acquired knowledge gleaned from creating the machines." (Ex 17.) Plaintiffs claim that Zmation's contracts placed it at risk for the possibility of failed research, thus its research was not funded. (*See id.*) Plaintiffs argue that they correctly calculated the credit under the limitation rules. (Ex 36.)

Defendant disagrees that Zmation engaged in a "process of experimentation," noting that it must have a "documented hypothesis, explanation of evaluation of alternatives, a methodical plan, or an explanation of each experiment." (Ex A at 3.) Defendant agrees that Zmation "retained the rights to the computer software portion of the machinery[.]" which could be "some amount of qualified research," but that amount was unsubstantiated. (*Id.* at 1.) Defendant notes that Zmation failed to provide any "breakout of time spent specifically on the computer software portion of the project." (*Id.*) Defendant maintains that Plaintiffs were required to reduce any qualified research expenses by the amount of payments Zmation was entitled to receive for each project. (*Id.* at 2 (citing Treas Reg § 1.41-4A(d)(3)).) If any qualified research expenses were left over, they could be the basis for the credit. (*Id.*) Finally, Defendant disputes Plaintiffs' calculation of the research credit limitation. (*Id.* at 5 (citing Treas Reg § 1.53-3).)

II. ANALYSIS

The issue is whether Plaintiffs are entitled to the research tax credit under IRC section 41 for the 2016 and 2017 tax years. That issue turns on whether Zmation was engaged in "qualified research" within the meaning of IRC section 41(d) and, if so, whether Plaintiffs correctly calculated the credit based on the special rule for shareholders in an S corporation under IRC section 41(g).

The Oregon Legislature intended to "[m]ake the Oregon personal income tax law identical in effect to the provisions of the (IRC) relating to the measurement of taxable income of individuals, estates and trusts, modified as necessary by the state's jurisdiction to tax and the revenue needs of the state[.]" ORS 316.007(1).^[4] "Any term used in this chapter has the same meaning as when used in a comparable context in the laws of the United States relating to federal income taxes, unless a different meaning is clearly required or the term is specifically defined in this chapter." ORS 316.012. Oregon law makes no adjustments to IRC section 41 and therefore, federal law governs the analysis.^[5] See ORS 316.680 (listing modifications to federal taxable income).

"[A]s with all tax credits, taxpayers who claim the research tax credit bear the burden of establishing their entitlement to it." Geosyntec Consultants, Inc. v. U.S., 776 F3d 1330, 1334 (11th Cir 2015). Taxpayers must be prepared to produce "any books, papers, records or memoranda bearing upon [any] matter required to be included in the return[.]" ORS 314.425(1); see also Treas Reg § 1.41-4(d) (requiring a taxpayer claiming the credit under section 41 to "retain records in sufficiently usable form and detail to substantiate that the expenditures claimed are eligible for the credit"). In this court, the burden of proof by a preponderance of the evidence falls upon the party seeking affirmative relief. ORS 305.427. Thus, Plaintiffs must establish their claim "by a preponderance of the evidence[.]" which "means the greater weight of evidence, the more convincing evidence." Feves v. Dept. of Revenue, 4 OTR 302, 312 (1971). "[I]f the evidence is inconclusive or unpersuasive, the taxpayer[s] will have failed to meet [their] burden of proof * * *." Reed v. Dept. of Rev., 310 Or 260, 265, 798 P2d 235 (1990).

A. Overview of Research Tax Credit Under IRC Section 41

IRC section 41 allows taxpayer a credit for increasing research activity expenses. The credit is computed by reference to "qualified research expenses" for the tax year. IRC § 41(a). Qualified research expenses are the sum of "in-house research expenses" and "contract research expenses." IRC § 41(b)(1). In-house research expenses include wages to employees for qualified services and supplies used in qualified research. IRC § 41(b)(2).

"Qualified research" is determined based on four tests: "(i) the section 174 test, (ii) the technological information test, (iii) the business component test, and (iv) the process of experimentation test." Max v. Comm'r, 121 TCM (CCH) 1250, WL 1177973 at *9 (2021); see also IRC § 41(d)(1). The tests are applied separately to each "business component." IRC § 41(d)(2). Certain activities are expressly excluded from qualified research, including "any research related to the adaptation of an existing business component to a particular customer's requirement or need"; "[a]ny research related to the reproduction of an existing business component (in whole or in part) from a physical examination of the business component itself or from plans, blueprints, detailed specifications, or publicly available information with respect to such business component"; and "[a]ny research to the extent funded by any grant, contract, or otherwise by another person (or governmental entity)." IRC § 41(d)(4).

B. Whether Zmation Conducted Qualified Research Under Four Tests

1. The IRC section 174 test

This test requires research expenditures to qualify as eligible research and experimental expenditures deductible under IRC section 174. See IRC § 41(d)(1)(A). Under IRC section 174, research and experimental expenditures are those "incurred in connection with the taxpayer's trade or business which represent research and development costs in the experimental or laboratory sense." Treas Reg § 1.174-2(a)(1). The term "in the experimental or laboratory sense" is defined as "activities intended to discover information that would eliminate uncertainty concerning the development or improvement of a product. Uncertainty exists if the information available to the taxpayer does not establish the capability or method for developing or improving the product or the appropriate design of the product." *Id.*

"Whether an uncertainty exists is an objective test that depends on the information available to the taxpayer." Union Carbide Corp. & Subsidiaries v. Comm'r, 97 TCM (CCH) 1207, WL 605161 at *78 (2009), *aff'd*, 697 F3d 104 (2nd Cir 2012), *cert denied* 568 US 1244 (2013); see also Suder v. Comm'r, 108 TCM (CCH) 354, WL 4920724 at *16 (2014) (taxpayer's projects to customize phone systems and add features for end users involved the elimination of uncertainty because "neither senior management nor anyone else [at the company] had information detailing the exact steps to create the products or their ultimate design" and no "publicly available information" existed). Not every uncertainty is the type of uncertainty contemplated by the section 174 test. See Max, 2021 WL 1177973 at *10 (uncertainties faced by a clothing designer concerning cutting and draping, fabric choices, thread sizes, and fabric shrinkage, were not the types of "uncertainties contemplated by section 174." Taxpayer's "garment makers already ha[d] the information necessary to

address [those] unknown[s].") In the realm of software development, courts have distinguished between developing new software and making "modifications to existing software programs" or "debugging" commercially available hardware and software. *See Suder*, 2014 WL 4920724 at *20.

Plaintiffs contend that Zmation encountered uncertainty in each of the projects for which it claimed the credit and summarized its "R&D challenges" for each project. Defendant did not offer any expert testimony or evidence to rebut Plaintiffs' assertions, so the court generally accepts that Zmation faced uncertainty in its projects. However, some challenges identified by Zmation do not appear to qualify as the right kind of uncertainty under section 174. For instance, "rewriting" or "upgrading" software to run on Windows 10 appears to involve modifying commercially available software or debugging existing software for a client.

a. Pilot model

Plaintiffs claim that Zmation's projects involved producing "pilot models," which qualify under the section 174 test. A "pilot model," "means any representation or model of a product that is produced to evaluate and resolve uncertainty concerning the product during the development or improvement of the product." Treas Reg § 1.174-2(a)(4). A few examples give further guidance on pilot models. In example 3, taxpayer "is engaged in the manufacture and sale of custom machines" and "contracts to design and produce a machine to meet a customer's specifications." Treas Reg § 1.174-2(a)(11). Taxpayer "has never designed a machine with these specifications" and "is uncertain regarding the appropriate design of the machine, and particularly whether features desired by the customer can be designed and integrated into a functional machine." *Id.* To resolve that uncertainty, taxpayer produces "a model that is used to evaluate and resolve the uncertainty concerning the appropriate design." *Id.* Costs associated with producing that model and testing "whether certain features can be integrated into the design of the machine" are deductible under section 174. *Id.* Taxpayer's additional costs "to produce the machine for sale to the customer" are not qualifying expenditures. *Id.*; *see also Union Carbide*, 2009 WL 605161 at *114 (deductions under section 174 are limited to "expenditures of an investigative nature expended in developing the *concept* of a model or product," as opposed to the construction, production, or manufacture of the product itself); *Little Sandy Coal Co., Inc. v. Comm'r*, 121 TCM (CCH) 1113, WL 514302 at *15 (2021) (the regulations draw "a distinction between a model of a product and the product itself.").

Example 7 concerns the eventual sale of the pilot model. Treas Reg § 1.174-2(a)(11). In that example, taxpayer is "a manufacturer of aircraft" that "is researching and developing a new, experimental aircraft * * *." *Id.* "To evaluate and resolve uncertainty * * * and test the appropriate design of the experimental aircraft, [taxpayer] produces a working aircraft * * *." *Id.* Those costs are qualifying research and development costs. *Id.* The treatment of those costs is unchanged even if taxpayer sells the aircraft "in a later year." *Id.* Example 7 makes clear that the taxpayer's purpose in making the model was to evaluate and resolve the uncertainty. That is contrasted with a taxpayer that "built the machine itself to fulfill its contractual obligations to its customer." *Little Sandy Coal Co.*, 2021 WL 514302 at *15.

Here, with the possible exceptions of the label print and apply system and the bending cover tying machine, the court finds no evidence suggesting that Zmation created any pilot models distinct from the product that it contracted to make for each client. For both the label print and apply system and the bending cover tying machine, Zmation quoted a higher price for the first "prototype" machine and a lesser price for subsequent machines. Even so, each contract expressly contemplates that the client will purchase the first or prototype machine from Zmation, distinguishing it from Example 7 in which the taxpayer developed a pilot model to resolve uncertainty and then, in a later year, sold the pilot model. The evidence shows that Zmation created its pilot models to fulfill its contract obligations to clients rather than to resolve uncertainty.

b. Quality control testing

Plaintiffs assert that Zmation faced uncertainty when its products failed "quality control testing" during its contractually mandated acceptance tests. "Quality control testing" is expressly excluded from the term "research or experimental expenditures." Treas Reg § 1.174-2(a)(6). Quality control testing is defined as "testing or inspection to determine whether particular units of materials or products conform to specified parameters * * *." Treas Reg § 1.174-2(a)(7); *see also Max*, 2021 WL 1177973 at *11-12 (taxpayer's testing on shrinkage, seam strength, and fabric strength was quality control based on guidelines from third-party organizations; the standards had been established, so the testing was "not undertaken to combat uncertainty"). Quality control testing "does not include testing to determine whether the design of the product is appropriate. Treas Reg § 1.174-2(a)(7).

Plaintiffs noted that many of Zmation's contracts do not contemplate final payment until the machine is accepted by the client and they claimed expenses associated with redesigning components of a machine that failed during "quality control testing." Although Plaintiffs used the term "quality control testing" — which is expressly excluded from qualified research by the treasury regulations — it appears they meant that term to refer to testing to determine if the design of the machine was appropriate. The fact that final testing is required before acceptance "does not establish that the design of every element" of the product "remained uncertain before those tests were successfully completed." *Little Sandy Coal Co.*, 2021 WL 514302 at *19 (concerning taxpayer's "final raise and lower test" after it delivered the dry dock to the client). Assuming a machine failed final testing, Zmation may have been required to redesign a component, not "scrap the entire [product] and start from scratch." *Id.* (declining to accept that taxpayer's "construction of the entire vessel was part of a process of experimentation").

Even accepting that Zmation incurred expenses to eliminate uncertainty, the court finds no evidence to separate those expenses from the costs of producing each product for the client. Zmation presented a spreadsheet listing the total hours worked on each project by each of four engineers. However, each engineer's time is not further divided into discrete tasks, such as testing the pilot model or redesigning a failed component.

2. Technological information test

To be "qualified research," an activity must be undertaken for the purpose of discovering technological information. IRC § 41(d)(1)(B)(i). Information is technological if "the process of experimentation used to discover such information fundamentally relies on principles of the physical or biological sciences, engineering, or computer science." Treas Reg § 1.41-4(a)(4). It's not enough that "science operates in the background" of an activity; taxpayer must "actually implement[] and rely[] on that science." *Max*, 2021 WL 1177973 at *13. "While the degrees held by those conducting the research for which a credit is claimed may be a factor in determining whether the technological information test is satisfied, no specific set of degrees is required." *Siemer Milling Co. v. Comm'r*, 117 TCM (CCH) 1196, WL 1598588 at *10 (2019).

Plaintiffs claimed the credit based on work performed by its engineers who, presumably, relied on principles of engineering and computer science to perform their work. Defendant did not challenge this point, so the court accepts Plaintiffs' claim that Zmation undertook activities to discover technological information, notwithstanding limited evidence. *But see Siemer*, 2019 WL 1598588 at *12 (rejecting taxpayer's "conclusory statement" that it relied on scientific principles when the record did "not establish what principles" taxpayer relied on or "how it relied on any particular principle in conducting experimentation.").

3. Business component test

The business component test requires that the research be undertaken with the purpose of discovering information "the application of which is intended to be useful in the development of a new or improved business component of the taxpayer." IRC § 41(d)(1)(B)(ii). A business component "means any product, process, computer software, technique, formula, or invention" used by the taxpayer in its trade or business or "held for sale, lease, or license" by the taxpayer. IRC § 41(d)(2)(B). Plaintiffs claimed the credit based on seven projects for customers, each involving a discrete product. Defendant did not challenge whether each product qualified as a business component.

4. Process of experimentation test

To be qualified research, "substantially all of the activities" must "constitute elements of a process of experimentation" for a qualified purpose. IRC § 41(d)(1)(C). Qualified purposes of research relate to "a new or improved function," "performance," or "reliability or quality." IRC § 41(d)(3). The "substantially all" requirement means that "80 percent or more of a taxpayer's research activities, measured on a cost or other consistently applied reasonable basis * * *, constitute elements of a process of experimentation * * *." Treas Reg § 1.41-4(a)(6).

"[A] process of experimentation is a process designed to evaluate one or more alternatives to achieve a result where the capability or the method of achieving that result, or the appropriate design of that result, is uncertain as of the beginning of the taxpayer's research activities." Treas Reg § 1.41-4(a)(5)(i). "The 'uncertainty' element of this test is essentially the same uncertainty as is required by the section 174 test[.]" *Union Carbide*, 2009 WL 605161 at *80. "However, this test also imposes a more structured method of discovering information than section 174 requires and may not include all actions a taxpayer takes to resolve uncertainty." *Id.* "Uncertainty concerning the development or improvement of the business component (e.g., its appropriate design) does not establish that all activities undertaken to

achieve that new or improved business component constitute a process of experimentation." Treas Reg § 1.41-4(a)(5)(i); *see also Little Sandy Coal Co.*, 2021 WL 514302 at *13 ("novelty may create uncertainty, but resolution of that uncertainty need not require experimentation").

Congress added the process of experimentation test based on concerns "that taxpayers had been claiming the credit 'for virtually any expenses relating to product development' as opposed to high technology." *Union Carbide*, 2009 WL 605161 at *80. Merely improving a business component is insufficient; the process of experimentation "may involve developing one or more hypotheses, testing and analyzing those hypotheses * * *, and refining or discarding the hypotheses as part of a sequential design process to develop the overall component." *Id.* Qualifying examples include "experiments undertaken by chemists or physicians in developing and testing a new drug" and engineers designing a new computer system, or new or improved "integrated circuits for use in computer or other electronic products[.]" *Id.* at *81.

"A systematic trial and error methodology" may qualify as a process of experimentation. Treas Reg § 1.41-4(a)(5)(i). However, "the term 'systematic' suggests that the project must involve a methodical plan involving a series of trials to test a hypothesis, analyze the data, refine the hypothesis, and retest the hypothesis so that it constitutes experimentation in the scientific sense." *Union Carbide*, 2009 WL 605161 at *81. "Simple trial and error" are insufficient. *Id.*; *see also Eustace v. Comm'r*, 312 F3d 905, 907 (7th Cir 2002) (distinguishing "tinkering" from a process of experimentation). "The process of experimentation need identify only one alternative," but "should be *capable* of evaluating more than one alternative." *Union Carbide*, 2009 WL 605161 at *81 (emphasis in original); Treas Reg § 1.41-4(a)(5)(i). There are no "rules regarding the recording of experiment results" beyond the requirement noted above that taxpayer must retain records to substantiate claimed expenditures. *Union Carbide*, 2009 WL 605161 at *82.

a. When software development involves a process of experimentation

Several cases involve software. A taxpayer that purchased a software package to use "as building blocks" to develop eight separate software programs to meet its needs was not engaged in a process of experimentation, which "involves something more than simply debugging a computer program." *United Stationers, Inc. v. U.S.*, 163 F3d 440, 441, 445 (7th Cir 1998), *cert denied* 527 US 1023 (1999). A taxpayer that developed and sold business management software was not involved in a "process of experimentation" but rather "normal software development":

"it enhanced its software package so that it could handle additional ratings computations, so that it could handle transactions between insurers and agencies, so that multiple people could work on the same customer file simultaneously without corrupting or overwriting each other's changes, and so that more functions could be handled in a given amount of random access memory. It discarded a word processing module licensed from another vendor, replacing it with a simple text editor with reduced memory demands but good form-lettergeneration features."

Eustace, 312 F3d at 906-907. A taxpayer that developed and sold software was not engaged in a process of experimentation because it believed that its goals were "technically feasible" even if it did not know the exact method to achieve the result. *Tax and Accounting Software Corp. v. U.S.*, 301 F3d 1254, 1267 (10th Cir 2002).

Revisions to the Treasury Regulations effective for the 2004 tax year cast some doubt on the extent to which the court should rely upon those cases. *See Union Carbide*, 2009 WL 605161 at *77 (discussing revisions). The revisions relaxed requirements to reflect congressional intent to distinguish between technological and non-technological research, not "to impose a scientific discovery requirement." *See Boris Bittker & Lawrence Lokken, Fed. Tax. of Income, Estates and Gifts* § 27.4.2 (2021) The regulations in effect beginning in 2004 appear to conflict with the holding in *Tax and Accounting Software*: "taxpayer may undertake a process of experimentation *if there is no uncertainty concerning the taxpayer's capability or method of achieving the desired result* so long as the appropriate design of the desired result is uncertain as of the beginning of the taxpayer's research activities." Treas Reg § 1.41-4(a)(5)(i) (emphasis added).

Suder, involving projects to customize phone systems or to add features for end users, was decided after the regulations were revised. 2014 WL 4920724 at *5. The court found "the vast amount of planning, testing, and bug fixing documentation in the record establishes that [taxpayer] did not know the appropriate design of any of the 12 products at the outset." *Id.* at *18. Taxpayer's "methodical product development process" involved numerous steps; its software engineers used "a systematic trial and error process" in which "[t]hey wrote snippets of code, tested the code, made adjustments as necessary, retested the code, and continued this iterative process until the code performed its intended function." *Id.* at *18-19.^[9] The court distinguished taxpayer's work from that in *United Stationers* because it involved the

development of new software and involved "technical uncertainty" rather than merely "business risks." *Id.* at 19. The court found that all but one of taxpayer's projects involved a process of experimentation. *Id.* at *20.^[7]

b. Whether Zmation engaged in a process of experimentation

From the evidence presented, it is unclear if any of Zmation's projects involved a process of experimentation. Other than client emails that refer to "testing," Plaintiffs provided no documentation showing Zmation's application of the scientific method, forming a hypothesis, analyzing, refining, and discarding. However, Zmation was not required to maintain a record of those steps assuming it has other evidence sufficient to establish that it was engaged in a process of experimentation. Plaintiffs claim that Zmation engaged in a trial and error process, evidenced by its client emails and Howard's handwritten notes. But those emails and notes do not clearly demonstrate a *systematic* method of trial and error capable of evaluating more than one alternative, rather than *simple* trial and error.

Several of Zmation's projects involved software and, to the extent any intellectual property rights are referenced in Zmation's contracts, they pertain to software.^[8] As noted above, some of Zmation's software development tasks appear to fall into the category of debugging, such as rewriting software to run on Windows 10. Other tasks appear to be "normal software development" such as "upgrading" existing software for a client. However, Zmation may have developed some new software using a process of experimentation, particularly where contracts reference the existence of custom code that may qualify as a work made for hire.

Even assuming some of Zmation's activities involved a process of experimentation, Plaintiffs have not demonstrated that "substantially all" or 80 percent of its activities did so. Plaintiffs provided the total time spent on each project by each engineer; it is not possible to distinguish between various activities or tasks within a given project. *See Little Sandy Coal Co.*, 2021 WL 514302 at *10-11 (rejecting taxpayer's argument that the process of experimentation test was met because at least 87 percent of the time its employees spent working on a tanker involved elements that differed from a prior ship built by taxpayer. "[T]he novelty of an element of a business component does not establish that the work involved in developing that element involves a process of experimentation.").^[9]

As with the section 174 test, the court is unable to distinguish work that involved a process of experimentation from production work, which does not qualify for the credit. *See Little Sandy Coal Co.*, 2021 WL 514302 at *11 (even "if the testing of [a] component of the tanker involved a process of experimentation, the work of the production employees in fabricating the physical component * * * would not be considered part of that process of experimentation * * * the production work does not have a close enough nexus to the testing to be considered qualified research in its own right"). Most of Zmation's contracts quoted a total price for the machine. To the extent contracts separately quoted engineering costs from physical components and services, the engineering costs were not 80 percent of the price.

5. Qualified Research Conclusion

Ultimately, the court is unable to determine whether or to what extent Zmation engaged in qualified research during the tax years at issue. Of its projects, two expressly referenced prototypes, a third referenced custom code subject to copyright or other intellectual property rights, and a fourth separately quoted a price for engineering design. Those may have involved some qualifying research, although it is unclear how to separate any such research from other costs that Zmation incurred to build the machine and fulfil its contractual obligations. Although the court concludes that Plaintiffs have not met their burden of proof as to the amount of any qualified research expenses, the court proceeds to consider whether any such expenses are nevertheless excluded because the research was funded.

C. Whether Zmation's Activities are Excluded from Qualified Research

IRC section 41(d)(4) excludes certain activities from the definition of qualified research. Most relevant here is the exclusion for funded research. IRC § 41(d)(4)(H). The term "funded" is not defined by the code, but regulations and case law clarify that research is *not* funded if "1) payment to the researcher is contingent on the success of the research and (2) the researcher retains substantial rights in the research." *Fairchild Industries, Inc. v. U.S.*, 71 F3d 868, 872 (1995); *see also* Treas Reg § 1.41-4A(d).^[10] Taken together, the regulations present "mirror image rules" to determine whether the researcher or the client is entitled to claim the credit. *Fairchild Industries*, 71 F3d at 870. "All agreements (not only research contracts) entered into between the taxpayer performing the research and other persons shall be considered in determining the extent to which the research is funded." Treas Reg § 1.41-4A(d)(1).

1. Whether payment was contingent upon success of the research.

Payments that are contingent upon the success of the research are not considered funded. Treas Reg § 1.41-4A(d)(1). As required by the regulations, courts closely scrutinize contracts to determine which party bears the risk of unsuccessful research.

In *Fairchild Industries*, taxpayer contracted with the Air Force to design and produce "a next generation trainer" for new pilots. 71 F3d at 870. The contract at issue was for "a full-scale development (FSD) phase" distinct from a "production phase." 71 F3d at 870. The FSD phase required taxpayer "to develop and deliver two prototype aircraft and all necessary support systems." *Id.* The production phase required it "to produce and deliver a target quantity of fifteen additional aircraft." *Id.*^[11] The "contract contained over 1,000 pages of technical specifications that required [taxpayer] to meet specific design, construction, quality, and performance standards" and required the Air Force to pay for the research only if taxpayer produced results meeting the contract specifications. *Id.* at 870-71. The Air Force paid taxpayer "bimonthly refundable advances" or "progress payments" based on a percentage of taxpayer's actual expenses. *Id.* at 871. Those payments were "liquidated" (*i.e.*, no longer refundable) upon acceptance by the Air Force of the relevant line item in the contract. *Id.* The court considered only whether the taxpayer's research was contingent upon its success because the parties agreed it retained substantial rights in the research. *Id.* at 872. The court held that taxpayer bore the risk of loss, notwithstanding the "financing" terms allowing progress payments or the fact that taxpayer, in fact, successfully completed many line items. *Id.* at 873.

In *Geosyntec Consultants*, the court reviewed two "cost-plus contracts subject to a maximum, also known as 'capped contracts,' under which [taxpayer] was paid for its labor and expenses, plus a mark-up, subject to an agreed-upon maximum price." 776 F3d at 1331-32.^[12] Under each contract, taxpayer issued monthly invoices to its client for services rendered. *Id.* at 1337-38. The client had termination rights under each contract. *Id.* Although the first contract had a total cap, the taxpayer "was entitled to 'extra compensation' for such work in an amount to be determined by the parties" in certain cases where "the state's environmental authorities imposed 'unreasonable demands' related to the issuance of any permit." *Id.* at 1336. The court found taxpayer was funded on both contracts, disallowing the credit. *Id.* at 1339. Even though taxpayer bore some "economic risk" that its budget might exceed the contract caps, the court found taxpayer would still be paid and, in some situations, had a right to additional compensation. *Id.* Neither the client's "right to review and comment" on work nor its right to dispute invoice items "equate[d] to a requirement that [taxpayer's] work product be evaluated and accepted prior to payment." *Id.* at 1341-42.^[13]

In *Dynetics, Inc. v. U.S.*, 121 Fed Cl 492, 495-97 (2015), the court sampled seven of an engineering company's contracts; the contract pricing structures included "fixed-price," "costplus-fixed-fee," "fixed-price-level-of-effort," and "time-and-materials." Taxpayer argued that it was at risk under its contracts because it was expected to produce a successful result and because each contract "included either an inspection clause or a warranty clause." *Id.* at 499. The court reviewed those clauses and, in most, found no express language allowing the purchaser to reject work that did not conform to contract specifications. *Id.* at 505, 514. With respect to clauses requiring taxpayer to correct defective work, the court found they "merely [limited taxpayer's] profit for the corrective work" and did not preclude taxpayer from recovering costs. *Id.* at 506 (emphasis in original), 510 (taxpayer allowed to recover hourly rate and costs, but not profit). A clause allowed the client to terminate the contract for convenience and capped its liability at "work done under the contract and certain unwinding costs." *Id.* at 516. Taxpayer argued it would be "left with the costs and expenses arising from developing the capabilities to do the full amount of work contemplated by the contract." *Id.* The court found that losing "an opportunity for profit is not the type of financial risk contemplated" in the regulations. *Id.* Business and economic risks are not relevant, only the risk of failed research. *Id.* at 515-16.

Plaintiffs claim that, as in *Fairchild Industries*, Zmation's contracts were fixed-price so Zmation was at risk for failed research. Upon review, the court disagrees. First, Zmation's contracts were to produce a machine for a client; the contracts themselves make no reference to research activities. To the extent that they involved research, it was not separately stated with the possible exceptions of two contracts that included additional costs for a prototype. By contrast, the contract at issue in *Fairchild Industries* was for the "full-scale development phase" with a separate contract for the production phase. Second, Plaintiffs provided no further evidence, aside from its contracts, relating to the research activities it undertook. Plaintiffs use the contracts as evidence of research activity while at the same time claiming that research activity occurred separately and apart from the contractually mandated duties.^[14] Third, Zmation's standard contract provided for payment due within 30 days of the invoice date. Its right to payment was not explicitly contingent upon the success of its research.^[15] Fourth, although many contracts held back final payment of 10 or 20 percent of the contract price based on a purchaser "acceptance test," those clauses did not create a risk that Zmation would not be paid. Most contracts contain no clauses expressly allowing the client to reject work that does not

conform to contract specifications.^[16] Zmation was required to correct defects under its limited warranty, though Zmation retained the right to determine whether a defect existed.

Finally, several of Zmation's contracts contained cancellation clauses, though all but one allowed Zmation to recover costs or more. Both the chassis inspection system and the triton automated aperture assembly system contracts allowed the purchaser to cancel for cause (breach or insolvency). Although the purchaser incurred no liability after giving notice of cancellation, Zmation was entitled to recover "cancellation costs." If the purchaser cancelled without cause, Zmation was entitled to receive the price of software work completed or the full price of products already manufactured. The triple cassette loaders contract allowed the purchaser to cancel without cause but required it to pay Zmation compensation for "proven effort until the date of cancellation." Another cancellation clause in the purchaser's document required the contracting parties to agree to a payment amount upon cancellation or, if they were unable to agree, Zmation would receive "such sum as may be otherwise lawfully determined."

The bending cover tying machine contract appears to place risk of loss on Zmation if the purchaser cancels for cause or if Zmation "fails to comply with any of the terms and conditions" of the order. In those cases, the purchaser is not liable to Zmation for any amount. However, that contract also includes Zmation's standard terms and conditions requiring the purchaser to pay invoices within 30 days, so Zmation's risks may have been somewhat mitigated. The court concludes that payment was not contingent upon the success of Zmation's research.

2. Whether Zmation retained substantial rights in research

If the "taxpayer performing research for another person retains no substantial rights in [the] research under the agreement providing for the research, the research is treated as fully funded * * *." Treas Reg § 1.41-4A(d)(2). For example, if the person for whom the research is performed is granted "the exclusive right to exploit the results of the research," then it is fully funded. *Id.* "Incidental benefits to the taxpayer from performance of the research (for example, increased experience in a field of research) do not constitute substantial rights in the research." *Id.* "If a taxpayer performing research for another person retains no substantial rights in the research and if the payments to the [taxpayer] are contingent upon the success of the research, neither the [taxpayer] nor the person paying for the research is entitled to treat any portion of the expenditures as qualified research expenditures." *Id.*

Once again, courts look to contract terms to determine whether taxpayer retained substantial rights in research. In *Dynetics*, a contract clause assigned "all rights in the results of [taxpayer's] work to the [client]." 121 Fed Cl at 518. Another clause entitled "patents" stated that "all rights, title, and interest in and to inventions or other intellectual property rights conceived or reduced to practice in the course of performance of the work called for by this Contract are hereby vested in the [client]." *Id.* Notwithstanding taxpayer's claim that it retained substantial rights in "non-patentable technology," the court concluded taxpayer failed to meet its burden of proof. *Id.* at 519. Similarly, in *Tangel v. Comm'r*, 121 TCM (CCH) 1001, WL 81731 at *2 (2021), the contract prohibited taxpayer from disclosing designs that it made for a client at the client's expense without the client's written consent. It further designated information that taxpayer prepared in performance of the contract as a work made for hire under copyright law. *Id.* The court found it "hard to see what rights — much less what 'substantial rights' — [taxpayer] could be viewed as retaining in the research it performed." *Id.* at *6. Although taxpayer retained the right to use "institutional knowledge it glean[ed] from research" performed on the contract, the court found those to be "incidental benefits" not "substantial rights." *Id.*

By contrast, the court in *Populous Holdings* found that taxpayer retained substantial rights in its research because no contract provisions "prohibited [taxpayer] from using the research it performed or * * * required it to pay the client for use of the research." 2019 WL 13032526 at *3. The court reached this conclusion even though two contracts expressly assigned copyrights to the client. *Id.* Even though the client owned resulting documents, the court found that taxpayer "retained copies of the documents for its use" and was not prohibited "from using the related researched technology in its business." *Id.*

Zmation's standard terms and conditions document does not shed light on whether Zmation retained substantial rights in research performed. It makes no reference to research. A clause states that "title to software products and all copies thereof shall remain Zmation's or others for whom Zmation has obtained a licensing right." That clause appears to pertain to preexisting software rather than the subject of Zmation's research, as indicated by use of the word "product" and the reference to software that Zmation has licensed from others. Similarly, the "copyrighted materials" clause also appears to pertain to preexisting materials owned by Zmation that it permits its client to access.

Several contracts state that Zmation's "source code" or "base code" remains its property. Plaintiffs did not define those terms but use of the words source and base suggests that code existed before Zmation began work on those contracts,

so it is not the subject of research. By contrast, Zmation's clients received "process scripts" or "custom code," which appear to be novel code developed by Zmation to fulfill the contract. That code may be the subject of Zmation's research, but it belongs to the client. The graft welder system retrofit contract not only states that the purchaser owns the custom code, including "all intellectual property rights therein," but also prohibits Zmation from disclosing that code to a third party or incorporating it into products or software for another party. The contract contemplates that the custom code may be a work made for hire under copyright law; either way, purchaser owns the custom code and any other intellectual property rights arising from it.

Plaintiffs have not proven by a preponderance of the evidence that Zmation retained substantial rights in any research performed.^[17] Its customers received the custom machine itself and the process scripts or custom code. Plaintiffs argued that Zmation gained "acquired knowledge gleaned from creating the machines." However, those are incidental benefits. Accordingly, the court finds that, to the extent any of Zmation's work constituted qualified research, it appears to have been funded under the contracts with its clients.

Having determined it is unable to ascertain any amount of qualifying research expenses under IRC section 41, the court need not consider whether Plaintiffs correctly calculated the credit for shareholders in an S corporation under IRC 41(g).

III. CONCLUSION

Upon careful consideration, the court concludes that Plaintiffs have not established by a preponderance of the evidence that they were entitled to claim the research tax credit under IRC section 41 for the 2016 and 2017 tax years. Now, therefore,

IT IS THE DECISION OF THIS COURT that Plaintiffs' appeal is denied.

[1] Additional sections under this clause concern risk of loss during shipment.

[2] The triple cassette loader quotation includes several site acceptance tests, each with 5 or 10 percent due after the test. (Ex 8 at 69.)

[3] The purchaser listed the same in its price schedule. (Ex 8 at 104.)

[4] The court's references to the Oregon Revised Statutes (ORS) are to 2015.

[5] During the tax years at issue, Oregon provided a qualified research tax credit based on similar definitions as IRC section 41. See ORS 317.152. The Oregon credit is not at issue in this appeal.

[6] Taxpayer's hardware engineers used both "a systematic trial and error process" as well as "a modeling process to design prototypes." *Id.* at *19.

[7] The excluded project "was undertaken to change the look and feel of the VIP user interface[.]" which the court found was not a qualified purpose because it concerned style, taste, or cosmetic factors. *Id.* at *20.

[8] Plaintiffs contend that Zmation's work on both the machines and the software involved qualifying research. Defendant concluded that only Plaintiff's software development might qualify. Zmation's contracts tend to support Defendant's view. Some contracts indicate copyright protection may extend to custom code whereas no contract references patent protection beyond general references to "Intellectual Property Rights."

[9] "If a business component fails the process of experimentation test because of the 'substantially all' requirement, the taxpayer may apply the shrinking-back rule * * * until an element that satisfies the test is reached." *Union Carbide*, 2009 WL 605161 at *80; see also Treas Reg § 1.41-4(b)(2). The court in *Little Sandy Coal Co.* could not apply the "shrinking back rule" because taxpayer employed "an 'all or nothing' strategy" with its credits. 2021 WL 514302 at *19. It "did not break down engineering and management team activities by project, much less by elements of each vessel." *Id.* Here, the court did not receive evidence allowing it to apply the shrinking back rule.

[10] Treas Reg § 1.41-4A(d) is made applicable by Treas Reg § 1.41-4(c)(9).

[11] Apparently, the parties never reached the production phase because "Congress cancelled the T-46A program in late 1986" after taxpayer had successfully completed 90 percent of the FSD work. 71 F3d at 871.

[12] Taxpayer also entered into several fixed-price contracts for which the district court found that taxpayer was not funded and, therefore, eligible for the research tax credit. 776 F3d at 1332-33.

[13] By contrast, in *Populous Holdings, Inc. v. Comm'r*, 2019 WL 13032526 at *2 (2019), the court found that taxpayer's research was *not* funded under a fixed-price contract that "required payment 'upon approval of each phase and/or deliverable of work for services performed.'" It further held that taxpayer's research was also *not* funded under two other fixed-price contracts that required taxpayer to "revise documents under certain circumstances at its own expense." *Id.* Evidently the taxpayer was not entitled to recover costs associated with such revisions. See *id.*

[14] For example, Plaintiffs claimed that Zmation created pilot models separate from the machines produced under contract, but the court finds no evidence of such pilot models.

[15] For some projects it appears that payment was due upon design approval or acceptance test. (*See e.g.* Ex 8 at 43, 69, 114.) For other projects, the payment structure was not contingent on approval or acceptance. (*See e.g. id.* at 2, 124.) The emails between Howard and Zmation's clients do not demonstrate that payment was contingent on the success for research but tend to show that payment was contingent upon shipping certain items. (*See e.g.* Ex 26 at 38; Ex 29 at 28; Ex 30 at 12-13 (invoices sent upon shipment of machines, with repairs and warranty work done after shipment).)

[16] Plaintiffs supplied a demand letter from one of Zmation's clients requesting return of all funds paid based on Zmation's significant delays, "substantiated failures," and "specific non-conformities." It is unclear if Zmation's client succeeded in its demand.

[17] As in *Populous Holdings*, most of Zmation's contracts do not expressly prohibit Zmation from using the research it performed or require Zmation to pay the client for use of the research. However, those facts are less persuasive here where the contracts are silent with respect to research and the court is not convinced that much if any qualifying research occurred. Ultimately, Plaintiffs bear the burden of proof and it is not satisfied.

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