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Chief Counsel Ruling 2024 - 01

03.15.2024

RE: Request for Chief Counsel Ruling for ******

Dear **. ******,

This is in response to the Taxpayer's Chief Counsel Ruling Request of September 1, 2023, wherein the Taxpayer seeks guidance as to whether subcomponents of an ********* **** **** or ********** may qualify as a pilot model under Internal Revenue Code (IRC) section 174 applicable in California under Revenue and Taxation Code (RTC) section 24365.

FACTS

Taxpayer creates ***** and ********** for its California ***** ****. In many cases Taxpayer designs and constructs a fully functional model of the **** or ********* to evaluate and resolve underlying technical uncertainties.

Project A required several years of planning and design followed by several years to construct. Like all ***** **** ***** and **********, Project A, involves the unique element of having individuals physically interact with it and/or be transported by it through some type of interaction. This necessarily implicates questions of safety, repeatability, and scale that are magnified when applied to a ********* **** **** that moves more aggressively and at greater speeds than other ***** or **********.

Project A features multiple **** ******* that were designed and developed alongside each other, such as ********* **** **** ********, a custom ******* system, ****** and ****** **********, ******* ******* systems, a **** ******, and a ****-**** **** *****. Project A required millions of lines of computer code to ********** the ********** *******, ******** ****, ******* **********, and *****-****** *******.

Project A housed Subcomponents B and C. Taxpayer built Subcomponents B and C as fully functioning models to evaluate and resolve technical uncertainty concerning their integration into Project A. Subcomponent B includes the development and advancement of

**** ***** designed to be ******** in the ***** to track the movement of the **** ********. Ideally, the ***** communicate their positions to Taxpayer's novel *** technology. Prior to Project A, Subcomponent B had only previously been used for slow moving ******** that traveled in straight lines. Taxpayer made performance improvements from previous ***** including (1) that Project A ******** could head in multiple directions at the start of the **** and (2) Project A ******** roamed two separate floors within the **** requiring the *** system to receive and understand both the location and the level of the **** ****. During testing, Taxpayer discovered that Project A's fast-moving ******** and aggressive maneuvers required the **** ***** to be precisely positioned for their location to be correctly communicated by the ******** to the ***. Prior to correction, these communication errors caused Subcomponent B to fail. Subcomponent B also failed due to the signal connection being dropped in dead zones along the full-scale **** path, resulting in the **** stopping altogether. Taxpayer experimented with antenna designs until Subcomponent B could be read from all potential ******** locations. Subcomponent C generally includes recoding the ****** ******* tracking software and its processing algorithm for the changes occurring in Subcomponent B and other hardware design changes that occurred within Project A.

Eliminating technical uncertainties regarding the performance of the **********, ensuring features and functions operated as technically intended, and achieving safety measures, required Project A to be designed and fully constructed before it could be thoroughly tested and commercialized. The large-scale integrations of Project A's Subcomponents B and C required testing on the Subcomponents at full scale. To accomplish this testing, Taxpayer employed hundreds of software engineers, software developers, electrical engineers, systems architects, mechanical engineers, and systems engineers on various aspects of Project A, including Subcomponents B and C. Taxpayer encountered various engineering test failures with Subcomponents B and C when testing was performed at scale.

ISSUE

Whether Subcomponents B and C of Project A may qualify as a pilot model under IRC section 174, applicable in California under RTC section 24365.

HOLDING

Subcomponents B and C were discretely produced to resolve uncertainty regarding the appropriate design of Subcomponents B and C before being placed into service, and Subcomponents B and C are not excluded from qualification as pilot models under Treasury Regulation section 1.174-2(a)(4) & (5).

DISCUSSION

California generally conforms to the IRC as of January 1, 2015, and to the federal research credit of IRC section 41 and the federal research expense deduction of IRC section 174 under RTC sections 23609 and 24365, respectively.

As relevant here, under IRC section 41(d)(1)(A) (the "Section 174 test"), any expenditures connected with the research must be eligible for treatment as expenses under IRC section 174.[1] The term "research or experimental expenditures," as used in IRC section 174, means "expenditures incurred in connection with the taxpayer's trade or business which represent research and development costs in the experimental or laboratory sense."[2] An activity generally constitutes "research and development" in the "experimental or laboratory sense" if: (1) the information available to the taxpayer does not establish the capability or method for developing or improving a product or process or the appropriate design of a product or process (i.e., an uncertainty exists); and (2) the activity is intended to discover information that would eliminate that uncertainty.[3]

IRC section 174 provides a deduction only for "'expenditures of an investigative nature expended in developing the concept of a model or product', as opposed to the construction or manufacture of the product itself."[4] Accordingly, the Section 174 test, requires that the qualified research expenses relate to the cost of producing pilot models.[5]

The United States Court of Appeals, Fifth Circuit, discussed the definition of "pilot model" under IRC section 174 in *Little Sandy Coal. Co., v. Commissioner*.[6]

> "Pilot model" is a defined term for purposes of research expense deductibility under IRC section 174. It 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."[7] As a result, the creator's intent matters. "Pilot model" is included in the definition of "product."[8]

The Treasury Regulations provide a section 174-specific shrinking-back rule, which requires analysis of whether any particular components or subcomponents were pilot models, discretely constructed with the purpose of evaluating and resolving uncertainty.[9] If the taxpayer fails to satisfy the section 174 test "at the level of the product," qualification can be determined at the level of the component or subcomponent of the product."[10]

A taxpayer must show that its purpose in constructing a pilot model was to evaluate and resolve uncertainty about capability, method, or appropriate design.[11] Potential defects found in a pilot model could cause a taxpayer to "scrap" the entire project and start afresh.[12]

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[1] *See Appeal of Pino* (10/28/2020) 2020-OTA-375P, at 8 (hereafter *Pino*).
[2] *Pino*, *supra*, 2020-OTA-375P, at 9, *quoting* Treasury Regulation section 1.174-2(a)(1).
[3] *Pino*, *supra*, 2020-OTA-375P, at 9, *citing* Treasury Regulation section 1.174-2(a)(1) & (2).
[4] *Union Carbide Corp and Subs. v. Commissioner* (2009) 97 T.C.M. (CCH) 1207; T.C. Memo 2009-50 at p. 317, *quoting Mayrath v. Commissioner* (1964) 41 T.C. 582, 590, affd. (5th Cir. 1966) 357 F.2d 209.
[5] *See Betz v. Commissioner* (2023) T.C. Memo 2023-84, at p. 73 (hereafter *Betz*).
[6] (7th Cir. Mar. 7, 2023) 62 F.4th 287 at p. 303, affg. (2021) 121 T.C.M. (CCH) 1113; T.C. Memo. 2021-15.
[7] Treasury Regulation section 1.174-2(a)(4).
[8] Treasury Regulation section 1.174-2(a)(3).
[9] *See Betz*, *supra*, T.C. Memo 2023-84, at p. 75, *citing* Treas. Reg. § 1.174-2(a)(5).
[10] *See* Treasury Regulation section 1.174-2(a)(5).
[11] *Betz*, *supra*, T.C. Memo 2023-84, at p. 73.
[12] *See e.g., Little Sandy Coal Co., v. Commissioner* (2021) 121 T.C.M. (CCH) 1113; T.C. Memo 2021-15, at p. 35, 53.

As noted, the Treasury Regulations allow for evaluation of components and subcomponents. Specifically, Treasury Regulation section 1.174-3(a)(5) provides a shrinking-back rule, and requires analysis of whether any particular components or subcomponents of Project A were pilot models, discretely constructed with the purpose of evaluating and resolving uncertainty about the product.[13]

1. SUBCOMPONENT B

Taxpayer's purpose in constructing Subcomponent B was to evaluate and resolve uncertainty about the capability, method, or appropriate design of each respective subcomponent.[14] The interaction of Subcomponent B in the physical environment of Project A was used to evaluate and resolve uncertainty about Subcomponent B. The **** or ********** fast-moving models and aggressive maneuvers required experimentation regarding the precise placement of **** ***** within each model for interaction with multiple models and the ***.[15] Taxpayer encountered various engineering test failures when experiments were performed at scale. Uncorrected, the defects found in Subcomponent B would have caused Taxpayer to "scrap" the entire Subcomponent B or develop a new technology and start over.[16]

Moreover, due to interaction with the physical scale and environment of Project A, Subcomponent B dropped connection at points along the full-scale **** path. The differences between a smaller scale model, and for example, the length of ***** **********, could be masked where the actual distances and obstacles were not used, leading to additional uncertainties upon scale-up. This demonstrates that Subcomponent B failed to function due to an inappropriate design. The facts presented indicate Taxpayer could not eliminate the uncertainty that arose with Subcomponent B without testing on a full Project A scale.[17]

Because Taxpayer discretely produced Subcomponent B to resolve uncertainty regarding the appropriate design of the component, Subcomponent B is not excluded from qualification as a pilot model.[18]

Under the facts presented, Taxpayer's purpose in constructing Subcomponent B was to evaluate and resolve uncertainty about the capability, method, or appropriate design of each respective subcomponent.[19] As a result, the models produced and used to evaluate and resolve uncertainty with respect to Subcomponent B are not excluded from

[13] *See Betz*, *supra*, T.C. Memo 2023-84, at p. 75.
[14] *See* Treasury Regulation section 1.174-2(a)(11) examples 3-5.
[15] Treasury Regulation section 1.174-2(a)(11), example 5.
[16] *See Little Sandy Coal Co., v. Commissioner* (2021) 121 T.C.M. (CCH) 1113; T.C. Memo 2021-15, at p. 35.
[17] *See e.g., Union Carbide v. Commissioner* (2009) 97 T.C.M. (CCH) 1207; T.C. Memo. 2009-50 at p. 262 ("We agree with petitioner that because of the differences between a commercial-scale reactor and a pilot plant reactor there were additional uncertainties relating to the design of the process that could not be eliminated through testing on smaller reactors.").
[18] *See* Treasury Regulation section 1.174-2(a)(11) examples 3-5.
[19] *See* Treasury Regulation section 1.174-2(a)(11) examples 3-5.

qualification as pilot models within the meaning of Treasury Regulation section 1.174-2(a)(4).

2. SUBCOMPONENT C

The uncertainties relating to Subcomponent B created uncertainties downstream in Subcomponent C. Taxpayer's purpose in constructing Subcomponent C was to evaluate and resolve uncertainty about the capability, method, or appropriate design of each respective subcomponent.[20] As above, the mass, speed, and aggressive maneuvers of the models and their interaction with Project A meant testing of Subcomponent C could not be accomplished through testing on a smaller scale. Subcomponent C required recoding its ****** ******* tracking software and its processing algorithm for the changes occurring in Subcomponent B, as well as other hardware design changes that occurred within Project A. The facts presented indicate Taxpayer could not eliminate the uncertainty that arose with Subcomponent C without testing on a Project A scale. Potential defects found in Subcomponent C could have caused Taxpayer to "scrap" the entire Subcomponent C and start over.[21]

The facts indicate C is not excluded from qualification as a pilot model under Treasury Regulation section 1.174-2(a)(4) & (5), because Taxpayer discretely produced Subcomponent C to resolve uncertainty regarding the appropriate design of the component, Subcomponent C is not excluded from qualification as a pilot model.[22]

In addition, Subcomponent C failed to function due to an inappropriate design. The models produced and used to evaluate and resolve uncertainty with respect to the Subcomponent C are not excluded from qualification as pilot models within the meaning of Treasury Regulation section 1.174-2(a)(4).

CONCLUSION

Taxpayer discretely produced Subcomponents B and C to resolve uncertainty regarding the appropriate design of Subcomponents B and C before being placed into service, and that Subcomponents B and C are not excluded from qualification as pilot models under Treasury Regulation section 1.174-2(a)(4) & (5).

Please note that except as to the application of a *pilot model* under Treasury Regulation section 1.174-2(a)(4) & (5) and the examples set forth in IRC section 1.174-2(a)(11), this ruling does not address whether Taxpayer's activities constitute qualified research under IRC section 41(d).

Please be advised that the tax consequences expressed in this Chief Counsel Ruling are applicable only to the named Taxpayer and are based upon and limited to the facts as submitted by Taxpayer. In the event of a change in relevant legislation, or judicial or administrative case law, a change in federal interpretation of federal law in cases where Franchise Tax Board's opinion is based on such an interpretation, or a change in the

[20] *See* Treasury Regulation section 1.174-2(a)(11) examples 3-5.
[21] *See Little Sandy Coal Co., v. Commissioner* (2021) T.C. Memo 2021-15, at p. 35.
[22] *See* Treasury Regulation section 1.174-2(a)(11) examples 3-5.

material facts or circumstances relating to the Taxpayer's request upon which this opinion is based, this opinion may no longer be applicable. It is the Taxpayer's responsibility to be aware of these changes, should they occur, and to maintain the relevant recordkeeping for as long as germane to the subject matter of this Chief Counsel Ruling.

This letter is a legal ruling by the Franchise Tax Board's Chief Counsel within the meaning of paragraph (1) of subdivision (a) of section 21012 of the Revenue and Taxation Code. Please attach a copy of this letter and the Taxpayer's request to the appropriate return(s) (if any) when filed or in response to any notices or inquiries which might be issued.

Very truly yours,

Jason Riley
Attorney IV