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# Practical Documentation of QRAs for the R&D Tax Credit

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## EXECUTIVE SUMMARY

- The research tax credit rewards taxpayers with a credit for engaging in qualified research activities (QRAs) by providing a credit for a portion of their qualified research expenditures (QREs) incurred in these activities.
- An activity must meet a four-part test to be a QRA, and taxpayers must be able to document that an activity passes all the tests.

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- Although there is no guidance from the IRS on what is sufficient documentation to establish that a taxpayer is entitled to a claimed research tax credit, taxpayers can use a number of court cases as guidance.
- A case study breaks down a production project into its major constituent steps and examines each step in detail to determine whether expenses incurred in them qualify for the credit and discusses the types of documentation that a taxpayer could use to prove that claimed research credits for the project are valid.

The federal research tax credit—also known as the research credit or R&D tax credit—was made permanent by the Protecting Americans From Tax Hikes Act of 2015 (PATH Act) in December 2015.<sup>1</sup> Despite its prolonged status as a temporary provision, being enacted and extended, often retroactively over the past 35 years,<sup>2</sup> the mechanics of the tax credit largely remained the same, which facilitated a smooth transition to permanent status.

The PATH Act makes the Sec. 41 research tax credit a permanent provision of the Internal Revenue Code, retroactive to Jan. 1, 2015 (it had expired), and retains a regular credit and alternative simplified credit (ASC) option.<sup>3</sup>

The research tax credit rewards taxpayers for engaging in qualified research activities (QRAs) by



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providing a tax credit equal to a percentage of certain eligible expenses.

QRAs are defined by a four-part test. The test requires that:

- The activities involve the elimination of uncertainty concerning the development or improvement of a product, so that the expenses of the activities would be deductible under Sec. 174 (Sec. 174 test);<sup>4</sup>
- The activities are useful in the development of a new or improved business component (business component test);<sup>5</sup>
- The activities discover information that is technological in nature (discovery test);<sup>6</sup> and
- Substantially, the activities are experimental in nature and conducted for a permitted purpose (process-of-experimentation test).<sup>7</sup>

Each activity must pass all four tests to be considered a QRA. Additionally, these tests must be applied separately to each of the taxpayer's business components.

Qualified research expenses (QREs) are expenditures that have a nexus to a QRA and are eligible to be included in the research tax credit computation. QREs can include wages paid to employees or amounts paid to self-employed individuals and owner-employees (wage QREs),<sup>8</sup> supplies used (supply QREs),<sup>9</sup> amounts paid to another person for the right to use computers (computer rental QREs),<sup>10</sup> and amounts paid to third parties to perform research (contract QREs).<sup>11</sup> Wage QREs can include amounts for engaging in qualified research, direct supervision, or support of QRAs.<sup>12</sup>

Accordingly, after identifying eligible QRAs, most taxpayers will compute wage QREs. Supply QREs, computer rental QREs, and contract QREs associated with these projects are then identified and added to the taxpayer's research tax credit computation.<sup>13</sup>

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There is a noticeable absence of guidance from Congress, Treasury, and the IRS as to what documentation is sufficient to substantiate research tax credits. The current regulations simply state that a taxpayer claiming research tax credits must retain records in a sufficiently usable form and detail to substantiate that the expenditures claimed are eligible for the credit.<sup>14</sup> They also refer to the general record retention requirements found in Regs. Sec. 1.6001-1.<sup>15</sup>

While traditional accounting and financial systems may capture QRE amounts, they typically do not capture the information needed to substantiate that the QRA four-part test and other rules have been satisfied. In the absence of records specifically created to document the research tax credit, taxpayers often have to rely on estimates and an assortment of documents, interviews, and other evidence to substantiate their expenditures that qualify for the research tax credits. This has resulted in controversy between taxpayers and the IRS as to what documentation is sufficient to substantiate expenditures.

## **Overview of the QRA Rules**

To appreciate the difficulty in documenting and ultimately successfully substantiating research tax credits, one must consider the type of information that the taxpayer must capture. This information is outlined in the four-part test and other limiting rules that define what qualifies as a QRA for the research tax credit.

### **Sec. 174 Test**

The Sec. 174 test is sometimes referred to as the *elimination of uncertainty* requirement and provides a tax deduction for expenses that are incurred or paid while a business is attempting to solve an uncertainty related to a development or improvement of a product.

This test looks to the nature of the activity.<sup>16</sup> To meet the Sec. 174 test, the research and experimental expenditure must:

- Be incurred in connection with the taxpayer's trade or business; and
- Represent a research-and-development cost in the experimental or laboratory sense.<sup>17</sup>

In practice, Sec. 174 allows a deduction for development expenses that have a direct nexus to activities that involve eliminating uncertainty through a methodology that could be replicated in a laboratory or testing environment.<sup>18</sup> Although the activities are not required to be conducted in a laboratory, the taxpayer must document the methods used to discover the new information and eliminate the uncertainty. This test is also met if the information that eliminates the uncertainty has already been discovered but is not available to the taxpayer, i.e., was not in the public domain and reasonably accessible at the time the activity was conducted.<sup>19</sup>

It is important to note that this test is not applied to the final research outcome but instead focuses on the methods used in the development process itself.<sup>20</sup> Consequently, this test can be satisfied where the underlying product or improvement is not itself technologically advanced.

### **Business Component Test**

The business component test requires that the activities be useful in the development of a new or improved business component.<sup>21</sup> The term "business component" means any product, process, computer software, technique, formula, or invention that is to be held for sale, lease, or license or used by the taxpayer in a trade or business.<sup>22</sup> A production process or manufacturing technique may also be an example of a business component.<sup>23</sup>

### **Discovery Test**

The discovery test is sometimes referred to as the *technological in nature* requirement and differs from the Sec. 174 test, as it focuses on the technical nature of the activity rather than the methodologies used. It requires that the purpose of the activity be to discover information that is

technological in nature.<sup>24</sup> Information is technological if the process of experimentation used to discover the information fundamentally relies on principles of the physical or biological sciences, engineering, or computer science.<sup>25</sup>

This test requires that the activity be undertaken to discover technological information to be used in developing a business component.<sup>26</sup> Research is undertaken for the purpose of discovering information if it is intended to eliminate uncertainty about the development or improvement of the business component.<sup>27</sup> It is generally agreed that technological uncertainty exists in situations where the information available in the public domain does not establish the capability or method for developing or improving the business component.<sup>28</sup>

Importantly, this test does not require the taxpayer to seek or obtain information that exceeds, expands, or refines the common knowledge of skilled professionals in the particular field of science or engineering in which the taxpayer is performing the research.<sup>29</sup> It also does not require the activity to be successful.<sup>30</sup>

### **Process-of-Experimentation Test**

The process-of-experimentation test expands on the Sec. 174 test as it applies to the entire research process, not just the elimination of uncertainty. However, unlike the Sec. 174 test, the process-of-experimentation test includes the *permitted purpose* requirement, meaning that the experiment must relate to a new or improved function, performance, reliability, or quality of the business component.<sup>31</sup>

The activity is not treated as conducted for a permitted purpose if it relates to style, taste, cosmetic, or seasonal design factors.<sup>32</sup>

Generally, to meet the requirements of this test, the taxpayer should (through its activities) establish a systematic progression of work that is based on the principles of established science and proceeds from hypothesis, observation, and evaluation and leads to logical conclusions.<sup>33</sup> More

specifically, the process must fundamentally rely on the principles of the physical or biological sciences, engineering, or computer science and involve:

- Identifying uncertainty concerning the development or improvement of a business component;
- Identifying one or more alternatives intended to eliminate that uncertainty; and
- Identifying and conducting a process of evaluating the alternatives (e.g., through modeling, simulation, or a systematic trial-and-error methodology).<sup>34</sup>

The taxpayer does not need to actually consider more than one alternative (or solution to a problem). However, the process must be evaluative, in that it generally should be capable of evaluating more than one solution or alternative.<sup>35</sup>

A taxpayer may undertake a process of experimentation even if there is no uncertainty concerning the taxpayer's capability or method of achieving the desired result, so long as the method of achieving that result and the appropriate design of that result are uncertain at the outset of the activity.<sup>36</sup>

The process of experimentation is evaluated on an activity-by-activity basis and generally is met if substantially all, i.e., at least 80% (measured by cost or other reasonably consistent basis), of the activities relate to a new or improved function, performance, reliability, or quality.<sup>37</sup>

## **Other Limiting Rules**

The four-part test is supplemented by various rules that disqualify certain activities that would otherwise be qualified. These rules exclude research (1) that begins after commercial production<sup>38</sup> (2) to adapt existing business components,<sup>39</sup> (3) duplicating existing business components<sup>40</sup> (4) involving surveys, studies, including activities related to management functions, market research, and efficiency

surveys,<sup>41</sup> (5) that is conducted outside of the United States<sup>42</sup> (6) in the social sciences<sup>43</sup> and (7) funded by a grant or contract or otherwise funded by another person or governmental entity.<sup>44</sup>

## Early R&D Tax Credit Case Law

Several older court cases addressed whether specific activities are eligible QRAs for the purposes of the research tax credit. These early court cases typically do not address the substantiation rules directly; however, they are instructive as they provide examples of what documents were and were not sufficient to substantiate research tax credits.

In *Kollsman Instrument Corp.*,<sup>45</sup> the Tax Court considered whether the taxpayer's activities satisfied the Sec. 174 test. To support its argument that it had performed research and development in fulfilling its contracts, the taxpayer cited sections of the contracts that specified the types of activities it was to perform. Because the court found that the taxpayer was only required to manufacture products for which it had been supplied the designs and specifications, the Sec. 174 test was not satisfied.

In *Fudim*,<sup>46</sup> the Tax Court considered patent applications and articles in scientific and popular magazines that described the taxpayer's activities and a public mention by U.S. experts about the taxpayer's status in the high-tech industry, coupled with the taxpayer's own testimony. The court found that the taxpayer's activities were well-documented during the experimentation process and concluded that all parts of the four-part test were satisfied.

In *United Stationers, Inc.*,<sup>47</sup> the Seventh Circuit considered project summaries prepared by the taxpayer. The court found that the nonspecific project summaries and statements produced were general in nature and did not demonstrate the uncertainty or experimental nature of the activities. The court concluded that the process-of-experimentation test was not satisfied.

In *Norwest*,<sup>48</sup> the Tax Court considered a report prepared by an expert. The expert's report was based on an extensive noncontemporaneous review of documents and employee interviews. The expert report detailed existing technology generally, rather than describing the activities the taxpayer undertook. The court found that the expert's report did not articulate the relevance of the underlying documents and their nexus to the R&D tax credit. The court concluded that for the activities that relied on the report, the four-part test was not satisfied.

In *Eustace*,<sup>49</sup> the Tax Court considered employee testimony that related to QRAs. The court found that the employee testimonies were flawed, as the taxpayer did not have its employees address basic technical issues relevant to each activity in the case. The court concluded that the discovery and process-of-experimentation tests were not met.

### **The IRS's Recent Focus on Substantiation**

The IRS refocused its efforts on examining research tax credits in 2007.<sup>50</sup> This shift in priorities was part of the IRS's tiered issue system, which was intended to allocate its limited audit resources to issues of strategic importance. The IRS provided the following explanation for adding the research tax credit as a tiered issue:

Formal and informal Research Claims are filed using high-level estimates, invalid assumptions, lack of nexus between [QREs] and the business component without contemporaneous documentation to support the claim.<sup>51</sup>

According to the IRS, these efforts were in response to "a growing trend whereby taxpayers . . . submit prepackaged material to support research tax credit claims."<sup>52</sup>

The IRS issued a document titled *Audit Techniques Guide: Credit for Increasing Research Activities (i.e. Research Tax Credit) IRC § 41* in June 2005 and another document titled *Research Credit Claims Audit Techniques Guide: Credit for Increasing Research Activities § 41* in May 2008. These audit

techniques guides (ATGs) do not explain what documentation is sufficient to substantiate research tax credits. Rather, the ATGs merely explain why prepackaged claims are insufficient. The IRS's 2008 ATG describes prepackaged claims as:

[S]ubmissions . . . delivered to examiners in multiple binders. While the submissions often set forth the methodology employed in preparing the research credit claim, the submissions frequently fail to substantiate that the taxpayer paid or incurred qualified research expenses ("QREs") as claimed. In addition, audits may have been restricted to evaluating the taxpayer's methodology for capturing QREs found in the prepackaged submission, as opposed to examining the research credit claimed on the amended return.<sup>53</sup>

The IRS's 2008 ATG goes on to explain that if the prepackaged submission relies too heavily on high-level estimations, then the IRS auditor should consider disallowing the claim. The ATG refers to interviews, estimates, and judgment sampling as examples of high-level estimations.

### **Recent R&D Tax Credit Case Law**

The IRS abandoned its tiered issue system, which classified research credits as Tier I issues, in 2012. Before that system was eliminated, however, it brought increased audit focus to research credits, which, in turn, produced a new round of research tax credit court cases. Like the earlier court cases, these recent cases provide examples of what documents were and were not found to be sufficient to substantiate research tax credits. Several of the recent court cases go further by addressing the substantiation rules directly.

In *McFerrin*,<sup>54</sup> a U.S. district court considered a research tax credit study prepared by a tax consulting firm. It concluded that the taxpayer had performed some QRAs, but it refused to accept the taxpayer's estimates given that there were no records of the hours worked by each employee or the hours worked on any qualified research

project. It refused to accept employee testimony of the time spent on each project because it was based on 9-year-old recollections and was therefore not probative.

On appeal, the Fifth Circuit reversed the district court's decision, noting that the district court should have applied the *Cohan* rule once it determined that there were some QRAs.<sup>55</sup> The *Cohan* rule allows courts to make estimates where there is some indication that the taxpayer is entitled to the tax deduction or credit.<sup>56</sup> It has been applied to a number of tax deductions and credits. The appeals court specifically noted that the district court did not have to accept the estimates prepared long after the tax credit years as described in the research tax credit study, but the district court should have looked to testimony and other evidence, including the institutional knowledge of employees, in determining a fair estimate given that the district court had concluded that the taxpayer had performed some qualified research.<sup>57</sup>

In *Union Carbide*,<sup>58</sup> the Tax Court considered testimony from outside engineers, an accountant who had computed the research tax credit, and several of the taxpayer's former employees, as well as various documents, including contemporaneous project reports, in determining that two out of the five projects claimed qualified for the credit. The court found this evidence sufficient to meet the four-part test and the other limiting rules raised by the IRS. As in *McFerrin*, the court applied the *Cohan* rule to the projects that qualified to estimate the amount of allowable credit.

In *Trinity Industries*,<sup>59</sup> a district court considered the unusual case where the taxpayer's records were inaccessible as they were maintained on computer systems no longer in use, a segment of the taxpayer's business had been sold to a third party, the taxpayer no longer had physical custody of the records, and many of the records had been destroyed by a hurricane. Given this fact pattern, the court concluded that some QRAs had been performed, and it looked at each of the boats that the company had manufactured to see whether

they qualified as experimental. Because there was insufficient evidence to apply the *Cohan* rule to estimate the amount of the QREs, each boat had to be looked at as a whole and each had to meet the 80% test, after which 100% of the expenses would qualify for the credit. For several of the boats, the court considered the taxpayer's testimony and the available records and concluded that the QREs for the boats were not properly documented, and therefore the taxpayer was not entitled to research credits for the boats.

In *Shami*,<sup>60</sup> the Tax Court considered a research tax credit study prepared by a consulting firm. The dispute primarily focused on the time allocated to QRAs for the two highly compensated owners. The court found that the laboratory records and testimony from the owners and its employees were insufficient to support the time allocations and that the owners' testimony was not credible because it was contradicted by the employees' testimony. The court refused to apply the *Cohan* rule to estimate the amount of the expense, as it had concluded that there was no reasonable basis for it to make an estimate.

In *Bayer Corp.*,<sup>61</sup> a district court considered whether a taxpayer could provide a sample of its supporting documentation for its research expenses to relieve the burden of collecting documentation for all its expenses. Bayer, a multinational company with many research sites, proposed sampling after it collected the required documents, including internal status reports, emails, correspondence with federal agencies, Excel files, Word documents, PowerPoint presentations, Access databases, lab notebooks, patent applications, and standardized and centrally maintained personnel and payroll records. The taxpayer described the expense in gathering the necessary records as follows:

The vast scope of this enterprise is illustrated by the fact that Bayer has already collected more than one billion (1,000,000,000) pages of electronic records that are potentially relevant to its claims from just four of the forty-nine sites at issue and has already turned over more than 3 million pages of responsive documents to the government.<sup>62</sup>

Despite the enormous effort that would be required to collect the supporting documentation from all its research sites, the court would not allow Bayer to only provide a sample of its supporting documents. The court stated that doing so would “constitute a reward” to the company for not keeping its supporting documents in sufficiently usable form and detail. The dispute between Bayer and the IRS is ongoing.

## **Analysis of IRS Guidance and Case Law**

While the IRS has never provided any significant guidance as to what documentation is acceptable to substantiate research tax credits, its descriptions of what documents are not acceptable and past court cases do provide insights as to how to document research tax credits.

As described in the IRS’s ATGs, the documentation should not be a prepackaged submission with a significant amount of boilerplate text that might be used for multiple taxpayers. The documentation should be specific to the taxpayer and its facts.

The case law illustrates that taxpayers that were unable to substantiate all of the tests at the time of trial generally lost their cases. This was particularly acute in the *Eustace* and *United Stationers* cases.

Wherever possible, all activities should be documented contemporaneously. This should include project descriptions that address all four of the tests and the other limiting rules in real time as the activity occurs.

Absent a situation like the *Trinity Industries* case, where records are missing due to factors outside the taxpayer’s control, estimates should be avoided if possible. Any estimates should be used only if there is clear evidence that the taxpayer engaged in some QRAs as in *McFerrin* and there are other records to establish a reasonable basis for the estimates as in *Fudim*. This could help establish a foundation for the court to apply the

*Cohan* rule to estimate the amount of the research tax credit.

All available documentation should be marshaled and organized in advance, including the various types of documents produced in *Union Carbide*, any applicable contracts, as in *Kollsman Instruments*, and even taxpayer and employee testimony and reputational evidence, as in *Fudim*.

The focus should be on the quality of information rather than on the volume. The ongoing *Bayer Corp.* saga provides a cautionary tale of having a large volume of records in different locations.

The information should be described and presented by applying the research tax credit rules, rather than being presented in light of the general state of the underlying technology or field of research as in the *Norwest* case.

The information should be organized by project and on an employee-by-employee basis. The time spent performing qualified and nonqualified activities should be well-documented, which was missing in *Shami*.

## **Case Study**

This case study illustrates what is necessary to show that an activity is a QRA and that the expenses of the activity are QREs for purposes of the credit.

Battery Co. develops high-quality, long-life rechargeable batteries for smartphones. Its purpose is to disrupt the market by developing a reliable battery that has twice the life of its next-closest competitor. The six product development activities undertaken during the battery project are described in Exhibit 1 (below).

## **Analysis of the Activities**

Exhibit 2 (below) illustrates the relationship between technological information (I) discovered

by Battery Co. over time (T), while undertaking the six activities in Exhibit 1. The graph has four key technological information points, namely:

- Point I0 is the taxpayer's knowledge base of relevant technological information before beginning the project.
- Point I1 is the information the taxpayer must review to be up-to-date on all relevant technological information in the public domain.
- Point I2 is the technological information that has been discovered by Battery Co. through undertaking the feasibility study, options analysis, and computer model simulations.
- Point I3 is the technological information that has been discovered by Battery Co. through building and testing the prototype.

Activity I, Research of Existing Information, is not a QRA as it relates to studies of existing information.<sup>63</sup> Through undertaking this activity, Battery Co. does acquire technological information (from point I0 to I1). However, it is not discovering new information or eliminating technological uncertainty, but rather building a knowledge base of existing technological information available in the public domain. Under normal circumstances, expenses associated with this activity do not qualify for the research credit. But, although not a QRA in its own right, the documentation created from Activity I may help substantiate Activities III, Modeling, and IV, Prototyping and Trialing.

Activity II, Economic Evaluation, is not a QRA because it is research that is related to management functions.<sup>64</sup> Through undertaking this activity, Battery Co. does not discover technological information. Expenses associated with this activity cannot be applied to the research credit.

Activities III, Modeling, and IV, Prototyping and Trialing, are QRAs and meet the four-part test. Expenses that are incurred or paid in connection with these activities may be included in the

research tax credit computation. A detailed analysis is provided below.

Activity V, Procurement, is a disqualified QRA as it relates to surveys, studies, and research related to management functions.<sup>65</sup> Battery Co. does not discover technological information by undertaking this activity. Expenses associated with this activity cannot be applied to the research credit.

Activity VI, Commercial Production, is not a QRA as it relates to the adaptation of existing business components<sup>66</sup> and to commercial production.<sup>67</sup> General commercial production as defined here is not eligible as no technological information was discovered and no experimentation was undertaken.<sup>68</sup> It is important to note that, if well-documented, difficult production activities such as automation or scale-up issues may have isolated QRA components and may therefore have eligible QREs (where nexus can be found).

## **Detailed Analysis of Activities III and IV**

### **Application of the Sec. 174 Test**

Activity III, Modeling, satisfies the Sec. 174 test because there was technological uncertainty at the outset as to how to design a battery with twice the life of its next-closest competitor. It was determined that the technological uncertainty could only be eliminated through a computer model simulation, conducted as research or development in the experimental or laboratory sense.

Activity IV, Prototyping and Trialing, satisfies the Sec. 174 test as there was technological uncertainty at the outset as to whether a reliable working prototype could be developed with the required specifications.

Battery Co. intended to discover information that would eliminate this technological uncertainty. It was determined that the uncertainty could be eliminated only through trials of a working prototype that were conducted as research or development in the experimental or laboratory sense.

## **Documentation Relevant to the Sec. 174 Test**

Documentation for the Sec. 174 test may be met through documents that describe the project and the technical uncertainty involved in the activities. This can be demonstrated through tax invoices, staff time sheets, records of resources allocated to the project, asset usage logs, project records, meeting notes, or reports that describe the technical issues or failures, the design options considered, and the feasibility studies performed. Supporting documents could include literature reviews conducted in Activity I that demonstrate the technological information gap. It may even be documented by Battery Co.'s previous products or product lineup, which may be found in earlier product catalogs, emails, or other sources.

## **Application of the Business Component Test**

Activity III, Modeling, satisfies the business component test. The activity produces a design and computer model for a reliable long-life battery. This intellectual property may be sold, leased, or licensed to a third party. For the same reasons, Activity IV, Prototyping and Trialing, satisfies this test.

## **Documentation Relevant to the Business Component Test**

The utility of the business component will likely be self-evident from the product and activities to design it. Documents created in Activity II, Economic Evaluation, such as the business plan, supplier quotes, and financial and budgeting reports, may be used. Additionally, bid proposals, contract documents, and emails may help substantiate that the product is intended to be held for sale, license, or use by Battery Co. in a trade or business.

## **Application of the Discovery Test**

Activity III, Modeling, satisfies the discovery test as its purpose was to discover technological information that would result in the development of a business component (in this case, a new battery design and computer model). The

literature search in Activity I, Research of Existing Information, did not uncover an existing design that resolves the technological uncertainty, and so a discovery must be made. The information discovered through the development and evaluation of various design options using computer simulations is represented on the graph as the distance between point I1 and point I2. The discovery relies on the principles of engineering and computer science.

Activity IV, Prototyping and Trialing, satisfies the discovery test as its purpose was to discover technological information that would result in the development of a working prototype of a reliable long-life battery. Activity III, Modeling, developed a design that was tested by a computer model, but did not develop and test a tangible prototype. The information discovered through the development and trialing of the prototype is represented on the graph as the distance between point I2 and point I3. The discovery relies on principles of engineering and science (i.e., chemistry).

### **Documentation Relevant to the Discovery Test**

While the science aspect will often be self-evident from the product and activities to design it, the discovered information may be demonstrated by various documents that describe the project, such as design documents for system architecture and source code, internal presentations or meeting notes, technical reports, engineering drawings, computer screenshots, data gathered or collected during the experiments, trial runs, or employee testimony.

### **Application of the Process-of-Experimentation Test**

The process-of-experimentation test involves demonstrating that each activity conducted at least one experiment and that that experiment was conducted for a permitted purpose.

Each experiment can be broken into three stages. The first stage identifies the uncertainty in the activity and requires the development of a hypothesis and the design of the activity. The

second involves identifying alternatives through observation. Finally, the third stage evaluates the alternatives through a results analysis, the formation of logical conclusions, and a reexamination of the original hypothesis.

Assuming that each QRA involves only one experiment, the four labeled xs displayed on Activities III and IV in Exhibit 2 illustrate the three stages of the experiment's procession. The *permitted purpose* requirement is satisfied if Activities III, Modeling, and IV, Prototyping and Trialing, were carried out for the purpose of creating a new reliable product intended to be sold.

Activity III, Modeling, satisfies the experimentation test as its permitted purpose was to test various designs using a computer model trial that would ultimately lead to a workable design of a reliable long-life battery unit. Battery Co. engaged in an evaluative process to identify uncertainty concerning the development of a reliable, long-life battery design. It then identified a number of alternatives that could eliminate that uncertainty. Finally, it conducted a process of evaluating the alternatives through computer modeling.

Activity IV, Prototyping and Trialing, satisfies the experimentation test as its permitted purpose was to develop and test through trials of a prototype that would ultimately lead to a commercial product within the design specifications. Battery Co. engaged in an evaluative process to identify uncertainty regarding the reliability of the prototype. It then conducted trials and identified a number of alternatives that could make the product more reliable. Finally, it identified and conducted a process of evaluating the alternatives through testing the prototype.

### **Documentation Relevant to the Process-of-Experimentation Test**

This experimentation test is often the most difficult test to document. Assuming one business component and one experiment, Activity III, Modeling, and IV, Prototyping and Trialing, could be documented by listing the identified technological uncertainties in real time over the

course of the activity. This would then be followed by documenting the experiments conducted that identified possible solutions to eliminate that uncertainty. Next, a document could be produced that describes the repeatable experiment that was used to evaluate the alternative solutions and remove technical uncertainty. Finally, the permitted purpose could be documented through business plans, feasibility studies, or internal emails that detail the intended functionality of the desired product.

In practice, this may be documented in a number of records, which vary greatly from one taxpayer to another. For example, this documentation may include screenshots of the computer simulation, photos or videos of the prototype at various stages during the testing, scrap or other artifacts, emails from internal or external technical personnel commenting on the testing methods used and the test outcomes, iterations of design specifications and engineering drawings, and various documents describing the project failures, such as internal presentations or meeting notes. QREs may be documented by employee time sheets and supply invoices that detail a connection to the activity (e.g., contractor costs used during testing).

## **Conclusion**

The IRS's expectation of what documentation is sufficient to substantiate research tax credits has increased substantially, which is evidenced by the IRS's ATGs and the growing number of court cases in this area. Most of the cases have concluded that there was not enough documentation or that the documentation was insufficient because it was too generic or disorganized. Even in the cases where the taxpayers were successful, the court opinions make it clear that slight factual differences could have changed the outcome.

To be prudent, taxpayers who want to claim R&D tax credits should review these cases to ensure that their research tax credits are properly documented in advance of filing their tax returns. This should include documenting the progression of information that is discovered while performing the research activities, to satisfy the four-part test.

To ensure all relevant information is captured, it is best to document research activities contemporaneously.

## Footnotes

<sup>1</sup>The Protecting Americans From Tax Hikes (PATH) Act of 2015, enacted as Division Q of the Consolidated Appropriations Act, 2016, P.L. 114-113.

<sup>2</sup>Before being made permanent, the research tax credit was extended for expenses paid or incurred on or before Dec. 31, 2014. Sec. 41(h)(1), before amendment by Section 121(a)(1) of the PATH Act of 2015.

<sup>3</sup>PATH Act of 2015, Section 121(a).

<sup>4</sup>Sec. 41(d)(1)(A).

<sup>5</sup>Sec. 41(d)(1)(B)(ii).

<sup>6</sup>Sec. 41(d)(1)(B)(i).

<sup>7</sup>Sec. 41(d)(1)(C).

<sup>8</sup>Secs. 41(b)(2)(A)(i) and (D).

<sup>9</sup>Secs. 41(b)(2)(A)(ii) and (C).

<sup>10</sup>Sec. 41(b)(2)(A)(iii).

<sup>11</sup>Sec. 41(b)(3).

<sup>12</sup>Sec. 41(b)(2)(B).

<sup>13</sup>IRS, *Audit Techniques Guide: Credit for Increasing Research Activities (i.e. Research Tax Credit) IRC § 41*, Ch. 4, Sections A—C (June 2005).

<sup>14</sup>Regs. Sec. 1.41-4(d).

<sup>15</sup>Id. Sec. 6001 is the general recordkeeping requirement that applies to most tax deductions and credits. It is not specific to the research tax credit but merely says that taxpayers are required to keep books and records to support their tax positions.

<sup>16</sup>Regs. Sec. 1.174-2(a)(1).

<sup>17</sup>Since the research tax deduction is not subject to the other three of the four-part tests that apply to the research tax credit, it is common for expenses that do not qualify for the research tax credit to qualify for the deduction. Taxpayers may not take both a research tax deduction and a tax credit for the same expense. See Sec. 280C.

<sup>18</sup>Regs. Sec. 1.174-2(a).

<sup>19</sup>Id.

<sup>20</sup>Id.

<sup>21</sup>Sec. 41(d)(1)(B)(ii).

<sup>22</sup>Sec. 41(d)(2)(B).

<sup>23</sup>Sec. 41(d)(2)(C).

<sup>24</sup>Sec. 41(d)(1)(B).

<sup>25</sup>Regs. Sec. 1.41-4(a)(4).

<sup>26</sup>Regs. Sec. 1.41-4(a)(2)(ii).

<sup>27</sup>Regs. Sec. 1.41-4(a)(3)(i).

<sup>28</sup>Id.

<sup>29</sup>Regs. Sec. 1.41-4(a)(3)(ii).

<sup>30</sup>Id.

<sup>31</sup>Sec. 41(d)(1)(C).

<sup>32</sup>Sec. 41(d)(3).

<sup>33</sup>Regs. Sec. 1.41-4(a)(5). The Sec. 174 test and the process-of-experimentation test are similar. In practice, the Sec. 174 test is commonly cited for the proposition that the product of the research does not have to be technologically advanced, and the process-of-experimentation test is commonly cited to help explain the taxpayer's evaluative process in conducting the research activity.

<sup>34</sup>Id.

<sup>35</sup>Id.

<sup>36</sup>Id.

<sup>37</sup>Sec. 41(d)(3) and Regs. Sec. 1.41-4(a)(6) (providing the 80% rule).

<sup>38</sup>Sec. 41(d)(4)(A).

<sup>39</sup>Sec. 41(d)(4)(B).

<sup>40</sup>Sec. 41(d)(4)(C).

<sup>41</sup>Sec. 41(d)(4)(D).

<sup>42</sup>Sec. 41(d)(4)(F).

<sup>43</sup>Sec. 41(d)(4)(G).

<sup>44</sup>Sec. 41(d)(4)(H).

<sup>45</sup>*Kollsman Instrument Corp.*, T.C. Memo. 1986-66.

<sup>46</sup>*Fudim*, T.C. Memo. 1994-235.

<sup>47</sup>*United Stationers, Inc.*, 163 F.3d 440 (7th Cir. 1998).

<sup>48</sup>*Norwest*, 110 T.C. 454 (1998).

<sup>49</sup>*Eustace*, T.C. Memo. 2001-66.

<sup>50</sup>IRS LB&I, Memorandum for Industry Directors, *Tier 1 Issue Research & Experimentation (R&E) Credit Claims Issue Directive #1* (4/4/07).

<sup>51</sup>IRS LB&I, *Tier 1, Research Credit Claims Quick Reference Guide*, p. 2 (October 2010).

<sup>52</sup>IRS, *Audit Techniques Guide: Credit for Increasing Research Activities (i.e. Research Tax Credit) IRC § 41*, Ch. 2, Section C (June 2005).

<sup>53</sup>*Research Credit Claims Audit Techniques Guide (RCCATG): Credit for Increasing Research Activities § 41*, Ch. 1 (May 2008).

<sup>54</sup>*McFerrin*, 492 F. Supp. 2d 695 (S.D. Tex. 2007).

<sup>55</sup>*McFerrin*, 570 F.3d 672 (5th Cir. 2009).

<sup>56</sup>See *Cohan*, 39 F.2d 540 (2d Cir. 1930).

<sup>57</sup>*McFerrin*, 570 F.3d at 679.

<sup>58</sup>*Union Carbide Corp.*, T.C. Memo. 2009-50.

<sup>59</sup>*Trinity Industries, Inc.*, 691 F. Supp. 2d 688 (N.D. Tex. 2010).

<sup>60</sup>*Shami*, T.C. Memo. 2012-78.

<sup>61</sup>*Bayer Corp.*, 850 F. Supp. 2d 522 (W.D. Pa. 2012).

<sup>62</sup>*Id.* at 529.

<sup>63</sup>Sec. 41(d)(4)(D).

<sup>64</sup>Sec. 41(d)(4)(D).

<sup>65</sup>Sec. 41(d)(4)(D).

<sup>66</sup>Sec. 41(d)(4)(B).

<sup>67</sup>Sec. 41(d)(4)(A).

<sup>68</sup>For purposes of the research tax credit, QRAs end when commercial production begins (Sec. 41(d)(4)(A)). Commercial production begins when the business component is developed to the point that it meets the basic functional and economic requirements of the taxpayer for the sale or use of the component (Regs. Sec. 1.41-4(c)(2)). The following activities occur after the start of commercial production: preproduction planning for a finished business component, tooling-up for production, trial production runs, troubleshooting involving detecting faults in production equipment or processes, accumulating data relating to production processes, and debugging flaws in a business component (*id.*).

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