Navigating the Research Credit

By Alex E. Sadler and Jennifer A. Ray


Alex E. Sadler


Jennifer A. Ray

Alex E. Sadler is a partner at Ivins, Phillips & Barker in Washington, where he represents taxpayers in research credit controversies. Jennifer A. Ray is an associate at Crowell & Moring LLP in Washington.

The section 41 research credit is the source of many protracted controversies between corporate taxpayers and the IRS. This report discusses the legislative and administrative climate regarding the research credit and identifies several factors that have contributed to the frequency of research credit disputes. To assist taxpayers in avoiding or resolving those controversies, the report provides a comprehensive primer on section 41 and its underlying regulations, explaining the credit's definitions, requirements, and computational rules and tracing their historical development. It also reviews several important cases addressing the scope of the credit, such as *McFerrin*, *Union Carbide*, *FedEx*, and *Trinity Industries*, and discusses their potential implications for taxpayers in planning or defending their research credit claims.

Table of Contents

I. Introduction

The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010 renewed the section 41 credit for increasing research activities, often referred to as the research credit, for the 14th time since it was originally enacted into law in 1981.[1] The new law included a one-year retroactive extension of the research credit through December 31, 2010, as well as a one-year prospective extension through December 31, 2011.

The Obama administration is committed to enhancing the research credit by making it permanent and increasing the alternative simplified credit rate from 14 to 17 percent.[2] In a March report, Treasury's Office of Tax Policy explained:

> A permanent research credit would improve the credit's incentive effect by providing businesses with certainty that they can make investments in long-term research projects and benefit from the credit over the course of the project. Increasing the rate of the alternative simplified credit from 14 percent to 17 percent will provide an improved incentive to increase research and, because the simplified credit base updates itself, the credit will more accurately reflect a firm's current operations.[3]

Treasury estimates that President Obama's proposals will provide approximately $106 billion in tax credits from fiscal 2012 through fiscal 2021.[4] "The expectation is that this enhanced and permanent credit will fund more than $10 billion per year in research activity in the United States, supporting nearly 1 million jobs in research," according to the report.[5]

---

[1]P.L. 111-312, section 731.

[2]Treasury Department, "Investing in U.S. Competitiveness: The Benefits of Enhancing the Research and Experimentation (R&E) Tax Credit" (Mar. 25, 2011), *Doc 2011-6342, 2011 TNT 59-41* (2011 Treasury report); *see also* Jackie Calmes, "Obama to Pitch Permanent Research Tax Credit," *The New York Times*, Sept. 4, 2010. In a speech on September 8, 2010, President Obama said: "Instead of tax loopholes that incentivize investment in overseas jobs, I'm proposing a more generous, permanent extension of the tax credit that goes to companies for all the research and innovation they do . . . right here in the United States of America" (*Doc 2010-19769, 2010 TNT 174-24*).

[3]2011 Treasury report, *supra* note 2, at 11.

[4]*Id.* at 9.

[5]*Id.*

While the fate of Obama's proposals remains unclear, in general the research credit has strong bipartisan and private sector support, and it will likely remain an important part of the U.S. corporate income tax landscape for the foreseeable future.

Nevertheless, the research credit continues to be the source of many disputes between taxpayers and the IRS. It is a recurring issue in IRS audits of large corporate taxpayers in industries such as manufacturing, energy, chemicals, sciences, electronics, and information technology.

There are many reasons for the prevalence of research credit controversies. The research credit is widely claimed. In 2008, the most recent year for which statistics are reported, 12,736 corporate taxpayers of all different sizes claimed $8.3 billion in research credits.[6] Companies with receipts from $10 million to $50 million claimed the research credit most frequently, with 2,583 companies falling in this category. By comparison, 1,734 taxpayers with receipts exceeding $250 million claimed the credit.[7] While claims were widely dispersed among companies of all sizes, research credit amounts were mostly distributed to companies with the largest business receipts and presumably the largest research and development budgets. Companies with receipts more than $250 million accounted for about $6.8 billion in credits, or approximately 82 percent of the $8.3 billion in total credits claimed.[8] Approximately 42 percent of the taxpayers claiming the research credit were engaged in manufacturing, including computers, electronics, electrical equipment, appliances, component parts, machinery, chemicals, and other commodities. Approximately 31 percent of the taxpayers claiming the research credit were engaged in professional, scientific, and technical services. Taxpayers engaged in information technology, wholesale trade, and other industries also claimed the research credit.[9]

Research credit claims are inherently fact-intensive. IRS agents must follow a comprehensive audit techniques guide (ATG) in conducting research credit examinations.[10] In April 2007 the IRS Large Business and International Division[11] designated research credits claimed in refund claims (as opposed to credits reported on original returns) as a Tier I issue of high strategic importance and having a significant impact across several industries.[12] Tier I issues are generally addressed by an issue management team consisting of LB&I technical advisers, specialists, and representatives from LB&I division counsel or chief counsel, and they cannot be resolved without the concurrence of an issue owner executive.[13] The April 2007 directive found research credit claims to be problematic to the extent that they are based on prepackaged studies marketed to taxpayers on a contingent-fee basis and use high-level estimates or biased judgment samples, lack a nexus between the claimed research expenses and specific research projects, or are supported by inadequate contemporaneous documentation.[14]

In May 2008 LB&I issued a new ATG specifically addressing affirmative research credit claims. The ATG requires agents to issue at the outset of examinations an information document request (IDR) consisting of 19 questions, many having multiple subparts.[15] The IDR focuses on significant compliance areas and generally requires taxpayers to defend all aspects of their claims.[16] Agents are to use the taxpayer's responses to the mandatory IDR to determine whether to issue a notice of claim disallowance or, if the claim is at least partially supported, to develop an audit plan. For audited claims, the ATG includes a sample write-up that develops multiple arguments agents may use to disallow research credit claims in their entirety.[17]

In January 2009 LB&I issued a second directive providing supplemental guidance on research credit claims within the Tier I designation.[18] In addition to several administrative clarifications, the directive instructed that agents must address the

---

[6]IRS Statistics of Income, "Corporation Research Credit," *available at* http://www.irs.gov/taxstats/article/0,,id=164402,00.html.

[7]*Id.* at Figure B.

[8]*Id.* at Figure C.

[9]*Id.* at tables 1 and 2.

[10]IRS, "Audit Techniques Guide: Credit for Increasing Research Activities (*i.e.*, Research Tax Credit) Section 41" (June 2005), *Doc 2007-27518*, *2007 TNT 244-29*.

[11]LB&I serves corporations, subchapter S corporations, and partnerships with assets greater than $10 million. It is organized along the following seven industries and examination support functions: communications, technology, and media; financial services; heavy manufacturing and transportation; natural resources and construction; retailers, food, pharmaceuticals and healthcare; global high wealth; and field specialists. The Large and Midsize Business Division became the LB&I on Oct. 1, 2010. For simplicity, this report refers to LB&I throughout.

(Footnote continued in next column.)

[12]LMSB-4-0307-025, "Industry Director Directive No. 1 on Research & Experimentation (R&E) Credit Claims" (Apr. 4, 2007), *Doc 2007-8754*, *2007 TNT 66-55*.

[13]IRS, "Issue Tiering Fact Sheet — LB&I," *available at* http://www.irs.gov/businesses/corporations/article/0,,id=200574,00.html.

[14]LMSB-4-0307-025, *supra* note 12.

[15]LMSB-4-0508-030, "Research Credit Claims Audit Techniques Guide (RCCATG): Credit for Increasing Research Activities Section 41" (May 2008), *Doc 2008-12059*, *2008 TNT 107-41*.

[16]*Id.* at Exhibit C.

[17]*Id.* at Exhibit E.

[18]LMSB-4-0608-035, "Industry Director Directive No. 2 on Research Credit Claims" (Jan. 15, 2009), *Doc 2009-1684*, *2009 TNT 15-17*.

applicability of the section 6676 penalty for erroneous refund claims in all cases in which a research credit claim is disallowed in part or in full.[19]

Another factor contributing to research credit controversies is the credit's complexity. Section 41 and its implementing regulations contain several definitions and rules governing qualifying activities, qualifying expenses, and the credit computation. Many of those definitions and rules are the product of years of debate and compromise among Congress, Treasury, the IRS, and private industry. Section 41's complexity prompted the IRS to form an issue management team consisting of a senior issue owner, three attorneys, and five technical advisers to assist agents in investigating, analyzing, and resolving the variety of issues that might arise under section 41.

A final factor contributing to research credit controversies, until recently, was a relative lack of useful judicial guidance. From the research credit's enactment in 1981 through 2008, only a handful of cases addressed it. Four of those cases — *United Stationers*,[20] *WICOR*,[21] *Norwest*,[22] and *Eustace*[23] — dealt with taxpayers' internal use computer software development activities. However, the courts in those cases applied the so-called discovery test for determining whether the activities were qualified research. As discussed below, Treasury and the IRS explicitly repudiated the discovery test in final regulations issued in December 2003, thus limiting the precedential value of those cases. Two cases — *Lockheed Martin*[24] and *Fairchild Industries*[25] — addressed the circumstances under which government contracts would be considered funded and thus ineligible for the research credit. Another case, *Research Inc.*,[26] addressed the accounting rules for a taxpayer's base period research expenses under pre-1989 computational rules. A final case, *Fudim*,[27] involved wages paid by a closely held corporation to a scientist and his wife and daughter in researching a modeling process. Collectively, those cases provided little guidance to corporate taxpayers in defining their research credit claims or in resolving disputes with the IRS.

The tide turned in 2009 and 2010 when seven research credit cases were decided in fast succession: *McFerrin*,[28] *Union Carbide*,[29] *TG Missouri*,[30] *Trinity Industries*,[31] *Deere & Co.*,[32] *Procter & Gamble*,[33] and *FedEx*.[34] As discussed below, those cases collectively provide valuable guidance to taxpayers claiming or defending research credits regarding the definition of qualified research, qualifying expenses, special rules applying to internal use software development, substantiation, and computational rules.

Most of the factors contributing to the prevalence of research credit controversies, such as the number of research credit claims and the fact-intensive nature of the eligibility determination, are inherent in the credit. Also, the IRS's institutional audit procedures and coordination of research credit issues are unlikely to be relaxed in the foreseeable future. However, the credit's complexity can be explained, and research credit cases can be summarized and distilled into generally applicable principles. This report undertakes to achieve those objectives in the hope of helping taxpayers avoid or successfully resolve research credit controversies.

II. A Comprehensive Primer

A. Legislative Purpose

The research credit was created in the Economic Recovery Tax Act of 1981 (ERTA),[35] a broad stimulus package that instituted "a program of significant multi-year tax reductions . . . to ensure economic growth in the years ahead."[36] Congress was concerned that the United States' lead in R&D was

[19] *Id.*

[20] *United Stationers Inc. v. United States*, 163 F.3d 440 (7th Cir. 1998), *Doc 99-488*, *98 TNT 250-5*.

[21] *WICOR Inc. v. United States*, 116 F. Supp.2d 1028 (E.D. Wis. 2000), *Doc 2000-27155*, *2000 TNT 205-38*.

[22] *Norwest Corp. v. Commissioner*, 110 T.C. 454 (1998), *Doc 98-25364*, *98 TNT 154-5*.

[23] *Eustace v. Commissioner*, 81 TCM 1370 (2001), *Doc 2001-8175*, *2001 TNT 55-9*.

[24] *Lockheed Martin Corp. v. United States*, 210 F.3d 1366 (Fed. Cir. 2000), *Doc 2000-12106*, *2000 TNT 83-10*.

[25] *Fairchild Industries Inc. v. United States*, 71 F.3d 868 (Fed. Cir. 1995), *Doc 95-10743*, *95 TNT 234-17*.

[26] *Research Inc. v. United States*, 76 AFTR 2d 95-5688 (D. Minn. 1995), *Doc 95-7359*, *95 TNT 147-7*.

[27] *Fudim v. Commissioner*, 67 T.C. 3011, 3012-3013 (1994), *Doc 94-5115*, *94 TNT 103-19*.

[28] *United States v. McFerrin*, 570 F.3d 672 (5th Cir. 2009), *Doc 2009-13123*, *2009 TNT 109-15*, *rev'g* 2008-2 USTC para. 50,583 (S.D. Tex. May 12, 2008), *Doc 2007-12909*, *2007 TNT 105-9*.

[29] *Union Carbide Corp. v. Commissioner*, 97 TCM 1207 (2009), *Doc 2009-5285*, *2009 TNT 45-5*.

[30] *TG Missouri Corp. v. Commissioner*, 133 T.C. 278 (2009), *Doc 2009-24993*, *2009 TNT 217-9*.

[31] *Trinity Indus. Inc. v. United States*, 691 F. Supp.2d 688 (N.D. Tex. 2010), *Doc 2010-2781*, *2010 TNT 25-16*.

[32] *Deere & Co. & Consol. Subs v. Commissioner*, 133 T.C. 246 (2009), *Doc 2009-23366*, *2009 TNT 203-6*.

[33] *Procter & Gamble Co. v. United States*, 2010-2 USTC para. 50,554 (S.D. Ohio 2010), *Doc 2010-60*, *2010 TNT 2-7*.

[34] *FedEx Corp. v. United States*, 2009-1 USTC para. 50,435 (W.D. Tenn. 2009), *Doc 2009-16668*, *2009 TNT 140-9*.

[35] P.L. 97-34, section 221. The research credit was initially codified at section 44F. It was renumbered to section 30 by the Deficit Reduction Act of 1984, P.L. 98-369, section 471(c), and renumbered to section 41 by the Tax Reform Act of 1986, P.L. 99-514, section 231(d)(3).

[36] S. Rep. No. 97-144, at 11 (1981).

diminishing relative to its trading partners, particularly Japan and West Germany, because businesses were reluctant to invest in research activities with long-term and uncertain market returns. It believed a substantial tax credit for research and experimental expenditures would help overcome the resistance of businesses to initiate or expand research programs.[37]

ERTA set the research credit to expire at the end of 1985.[38] The expiration date was intended to allow Congress to evaluate the credit's operation and to determine whether it should be extended and modified.[39] ERTA defined qualified research eligible for the credit as having the same meaning as the term ''research and experimental'' under section 174, which generally provides alternative methods of tax accounting for research or experimental expenditures.[40] The only activities specifically excluded from the definition of qualified research were research conducted outside the United States, research in the social sciences or humanities, and research funded by a grant, contract, or otherwise.[41]

When bills were introduced in 1983 and 1985 to make the research credit permanent,[42] Treasury supported a temporary extension of the credit to allow for more time to evaluate its effectiveness, but only if that extension were coupled with a more precise definition of qualified research.[43] According to Treasury, the imprecision of the ERTA definition had given taxpayers unwarranted flexibility to classify business costs as qualifying R&D costs. Treasury did not consider that imprecision a problem for purposes of section 174 since taxpayers could otherwise deduct research costs as ordinary business expenses under section 162. However, it was unacceptable for research credit purposes because it allowed taxpayers to claim as creditable expenses the costs of developing new products involving no technological innovation, the costs of nonexperimental methods of discovering information (such as troubleshooting and debugging), and all preproduction costs associated with newly developed products, even when the production process itself was not experimental.[44]

Treasury's concerns resonated with Congress.[45] When it extended the research credit for three years as part of TRA 1986,[46] Congress addressed those concerns by tightening the definition of qualified research to include only activities that are eligible for treatment under section 174 *and* are undertaken to discover information that is technological in nature, is intended to be useful in the taxpayer's trade or business, and employs a process of experimentation.[47] The new definition was intended to target the research credit on technological innovations in the functional, as opposed to stylistic, aspects of products and production processes developed through a process of experimentation. Conversely, the TRA 1986 amendments were intended to exclude non-technological activities, routine product development costs, and other activities that by their very nature would not result in technological innovation.

Since 1986 Congress has continually extended the research credit, with only a few temporary lapses.[48] In extending the credit, Congress has emphasized that ''research is the lifeblood of our economic progress and that effective tax incentives for research and development must be a fundamental element of America's competitiveness strategy.''[49] Congress has also observed that technological development is an important component of economic growth and that

---

[37]*Id.* at 76-77; H.R. Rep. No. 97-201, at 111 (1981).

[38]P.L. 97-34, section 221 (former section 44F(a)).

[39]S. Rep. No. 99-313, at 694 (1986); H.R. Rep. No. 99-426, at 177 (1985).

[40]P.L. 97-34, section 221 (former section 44F(d)); reg. section 1.174-1.

[41]P.L. 97-34, section 221 (former section 44F(d)).

[42]S. 738, the Research Incentives Continuation Act of 1983; S. 2165, the High Technology Research and Scientific Education Act of 1983; S. 58, the High Technology and Scientific Education Act of 1985.

[43]Statement of Treasury Assistant Secretary of Tax Policy John E. Chapoton, S. Hrg. 98-205 (May 27, 1983), at 99-101; Statement of Chapoton, S. Hrg. 98-843 (Feb. 24, 1984) (1984 Chapoton statement), at 74-83, 91-104; Statement of Treasury Acting Assistant Secretary of Tax Policy Ronald A. Pearlman, H.R. Rep. Hrg. 98-102 (Aug. 2-3, 1984) (Pearlman statement), at 24-43.

[44]1984 Chapoton statement, *supra* note 43; Pearlman statement, *supra* note 43. Treasury's concerns were also reflected in President Reagan's 1985 tax reform proposals. *See* ''The President's Tax Proposals to the Congress for Fairness, Growth, and Simplicity'' (May 1985), at 301-303.

[45]S. Rep. No. 99-313, at 694-695 (''The committee believes that the definition [of qualified research] has been applied too broadly in practice, and some taxpayers have claimed the credit for virtually any expenses relating to product development.''); H.R. Rep. No. 99-426, at 178 (1985) (same).

[46]TRA 1986, section 231.

[47]TRA 1986, section 231(b) (codified at section 41(d)(1)(B)); *see also* H.R. Rep. No. 99-426, at 178 (1985); S. Rep. No. 99-313, at 695 (1986).

[48]Technical and Miscellaneous Revenue Act of 1988, P.L. 100-647, section 4007; Tax Extension Act of 1991, P.L. 102-227, section 101; Small Business Job Protection Act of 1996, P.L. 104-188, section 1204; Taxpayer Relief Act of 1997, P.L. 105-34, section 601; Tax and Trade Relief Extension Act of 1998, P.L. 105-277, section 1001; Tax Relief Extension Act of 1999, P.L. 106-170, section 502; Working Families Tax Relief Act of 2004, P.L. 108-311, section 301; Tax Relief and Health Care Act of 2006, P.L. 109-432, section 104; Emergency Economic Stabilization Act of 2008, P.L. 110-343, section 301; and Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, P.L. 111-312, section 731.

[49]H.R. Conf. Rep. No. 100-1104, pt. 2, at 88 (1988).

a research tax credit ''can help to promote investment in research, so that research activities undertaken approach the optimal level for the overall economy.''[50]

In its recent report supporting Obama's proposal to enhance the research credit, Treasury's Office of Tax Policy summarized the credit's overarching legislative purpose:

> The Research & Experimentation (R&E) tax credit encourages innovation and provides a powerful incentive for businesses to continue to invest in research projects. Investments in research and experimentation produce technological advancements that drive productivity growth and improvements in U.S. living standards. Businesses may underinvest in research, however, because they may not be able to capture the full benefit of their spending. The R&E tax credit is designed to address this underinvestment and to increase the total amount of research activity undertaken in the United States.[51]

B. Basic Research Credit Computation

Section 41(a)(1) allows a taxpayer a credit against income taxes in an amount equal to 20 percent[52] of the increase (if any) of its qualified research expenses (QREs) for the tax year over a base amount.[53] QREs are the sum of in-house research expenses and contract research expenses incurred by a taxpayer in carrying on its trade or business during the tax year.[54] As the Treasury study explains, the research credit was ''designed to be an incremental tax subsidy, meaning that firms earn a credit only for their research expenses that exceed a defined base amount.''[55] The base amount component of the research credit computation is discussed below.

The first category of QREs — in-house research expenses — includes wages paid to an employee for qualified services and amounts paid for supplies used in the conduct of qualified research.[56] The term ''wages'' has the same definition as under section 3401(a) and generally includes all forms of compensation subject to employment tax withholding.[57] The term ''qualified services'' means services consisting of either engaging in qualified research or in the direct supervision or direct support of qualified research.[58] ''Engaging in qualified research'' is defined as the actual conduct of qualified research (for example, a scientist conducting laboratory experiments).[59] ''Direct supervision'' refers to the immediate supervision or first-line management of qualified research.[60] ''Direct support'' means services in direct support of the persons actually conducting qualified research or of the persons directly supervising them.[61] Direct support of research does not include general administrative services or other services that benefit the research only indirectly, such as the services of payroll personnel in preparing salary checks or of janitorial staff in cleaning a laboratory.[62]

The term ''supplies'' refers to any tangible property other than land or improvements to land, and property of a character subject to the depreciation allowance.[63] Thus, supplies are broadly defined to include all forms of personal property other than those explicitly excluded. Supplies are used in the

---

[50]H.R. Rep. No. 103-111, at 599 (1993); *accord* S. Rep. No. 104-281, at 40 (1996); H.R. Rep. No. 105-148, at 369 (1997); S. Rep. No. 105-33, at 54-55 (1997); H.R. Rep. No. 109-304, at 33-34 (2005).

[51]2011 Treasury report, *supra* note 2, at 1.

[52]Section 280C(c)(1), enacted as part of the Technical and Miscellaneous Revenue Act of 1988, P.L. 100-647, section 4008(a), disallows any deduction for the portion of a taxpayer's QREs for a tax year that is equal to the section 41(a) research credit for that year. The subsection thereby reduces the taxpayer's section 174 or other deduction for the QREs incurred in the year by the amount of the research credit. Section 280C(c)(1) was enacted to eliminate the possibility that a taxpayer would receive a double tax benefit for each research dollar spent. H.R. Rep. No. 100-795, at 452-453 (1988); H.R. Conf. Rep. No. 100-1104, at 88 (1988). As an alternative to decreasing its deducted or capitalized QREs, a taxpayer may elect to claim a reduced research credit. Section 280C(c)(3). If an election is in effect, the reduced research credit equals the research credit computed without regard to section 280C(c) less the product of the research credit amount computed without regard to section 280C(c)(3) multiplied by the maximum applicable tax rate. Section 280C(c)(3)(B). Under current corporate marginal tax rates, the research credit when a section 280C(c)(3) election is in effect equals 65 percent of the full research credit, or a 13 percent credit rate as opposed to a 20 percent credit rate. A section 280C(c)(3) election is made by claiming the reduced credit by the method provided in section 280C(c)(3)(B) on an original return for the tax year, filed at any time on or before the due date (including extensions) for filing the income tax return for that year. Section 280(c)(3)(C); reg. section 1.280C-4(a).

[53]Section 41(a)(1). The research credit also consists of separately calculated component credits for basic research payments to universities and other qualified organizations (section 41(a)(2)) and energy consortium payments (section 41(a)(3)). This report addresses only the incremental research credit provided in section 41(a), which applies to most private R&D activities and costs.

[54]Section 41(b)(1)(A) and (B).

[55]2011 Treasury report, *supra* note 2, at 7.

[56]Section 41(b)(2)(A)(i) and (ii).

[57]Section 41(b)(2)(D).

[58]Section 41(b)(2)(B); reg. section 1.41-2(c).

[59]Reg. section 1.41-2(c)(1).

[60]Reg. section 1.41-2(c)(2).

[61]Reg. section 1.41-2(c)(3).

[62]*Id.*

[63]Section 41(b)(2)(C).

conduct of qualified research if they are used in the performance of qualified services as defined above.[64] Supply costs that are either indirect research expenditures or general and administrative expenses do not qualify as in-house research expenses.[65] Generally, amounts incurred for utilities such as water, electricity, and natural gas in the facility in which qualified research is performed are treated as general and administrative expenses.[66] However, a taxpayer is entitled to extraordinary expenditures for utilities to the extent it can establish that those expenditures were required by the special nature of the research.[67]

The second category of QREs — contract research expenses — includes 65 percent of any expense paid or incurred by the taxpayer to any person (other than an employee) for the performance of qualified research on behalf of the taxpayer.[68] That expense must be paid or incurred under an agreement that is: (1) entered into before the performance of the qualified research, (2) provides that research be performed on behalf of the taxpayer, and (3) requires that the taxpayer bear the expense even if the research is unsuccessful.[69] Qualified research is performed on behalf of the taxpayer if the taxpayer has the right to the research results (although not necessarily the exclusive right).[70]

C. Qualified Research

1. Primary definitional tests.

a. Generally. Each type of QRE (wages, supplies, and contract research) must be incurred in the conduct of qualified research. To constitute qualified research, an activity must satisfy four primary definitional tests: (1) The expenses connected with the research must be eligible for treatment as expenses under section 174 (the section 174 test); (2) the research must be undertaken to discover information that is technological in nature (the technological in nature test); (3) the application of that information must be intended to be useful in the development of a new or improved business component of the taxpayer (the business component test); and (4) substantially all the research activities must constitute elements of a process of experimentation (the process of experimentation test).[71] The four primary qualified research tests are discussed in turn below.

When Congress enacted the research credit, it directed that the definition of qualified research be administered ''in a manner consistent with the intent Congress has expressed in enacting and extending the research credit.''[72] Similarly, in extending the research credit in 1999, House and Senate conferees expressed their concern that the definition of qualified research ''be administered in a manner that is consistent with the intent Congress has expressed in enacting and extending the research credit.''[73] Accordingly, the IRS should not be institutionally predisposed to disallowing the research credit. To the contrary, any presumption should be in favor of allowing the research credit whenever it serves the statute's overarching purpose of stimulating and rewarding R&E endeavors that result in technological innovations. As Treasury stated in a 1984 report to President Reagan, ''the credit is intended to reward those engaged in research and experimentation of unproven technologies.''[74]

b. Section 174 test. The section 174 test requires that expenditures connected with the research activities be eligible for treatment as expenses under section 174, which provides alternative methods of accounting for research or experimental expenditures.[75] The regulations define research or experimental expenditures as ''expenditures incurred in connection with the taxpayer's trade or business which represent research and development costs in the experimental or laboratory sense.''[76] An activity is research or 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 (that is, an uncertainty exists); and (2) the activity is intended to discover information that would eliminate that uncertainty.[77]

A taxpayer need only be uncertain about the capability *or* method *or* the appropriate design of the improvement.[78] Accordingly, an uncertainty may exist even if the taxpayer knows that it is

[64]Reg. section 1.41-2(b)(1).
[65]*Id.*
[66]Reg. section 1.41-2(b)(2)(i).
[67]Reg. section 1.41-2(b)(2)(ii).
[68]Section 41(b)(3); reg. section 1.41-2(e)(1).
[69]Reg. section 1.41-2(e)(2).
[70]Reg. section 1.41-2(e)(3).
[71]Section 41(d)(1)(A)-(C).
[72]S. Rep. No. 97-144, at 76-77 (1981); H.R. Rep. No. 97-201, at 111 (1981).
[73]H.R. Conf. Rep. No. 106-478, at 132 (1999).
[74]''Treasury Report on Tax Simplification and Reform'' (Nov. 27, 1984), at 301.
[75]Section 174; reg. sections 1.41-4(a)(1) and 1.174-1.
[76]Reg. section 1.174-2(a)(1).
[77]Reg. sections 1.41-4(a)(3)(i) and 1.174-2(a)(1) and (2).
[78]Reg. section 1.174-2(a)(1) (emphasis added).

technically possible to achieve a goal but is uncertain of the method or appropriate design to reach that goal.[79]

The above standards apply to the nature of the activity examined, not to the nature or level of technological advancement represented by the product or process.[80]

c. Technological in nature test. The research activity must be undertaken for the purpose of discovering information that is technological in nature.[81] According to the regulations, information is technological in nature if it "fundamentally relies on principles of the physical or biological sciences, engineering, or computer science."[82] A taxpayer may employ existing technologies and may rely on existing principles of the physical or biological sciences, engineering, or computer science to satisfy this requirement.[83]

The TRA 1986 amendments established the technological in nature test to address concerns that the credit was being claimed by taxpayers "in industries that do not involve high technology or its application in developing technologically new and improved products or methods of production."[84] Under the technological in nature test, research to develop new or improved characteristics of financial services or similar products no longer qualified for the credit.[85]

For a time, Treasury and the IRS asserted that the technological in nature test required that a taxpayer seek to discover information that is new not just to the taxpayer, but that expands or refines the state of knowledge in the relevant field of science. That requirement, widely referred to as the discovery test, arose out of a series of cases in which courts embraced the government's litigating position that research activities must be undertaken to exceed, expand, or refine known scientific principles to qualify for the research credit.[86]

In 1998 Treasury and the IRS proposed regulations adopting the discovery test.[87] The 1998 proposed regulations stated:

> For purposes of section 41(d) and this section, the term discovering information means obtaining knowledge that exceeds, expands, or refines the common knowledge of skilled professionals in a particular field of technology or science.[88]

Congress disapproved of the proposed regulation. In the conference report to the 1999 extension of the research credit, the conferees admonished the secretary of the Treasury:

> to consider carefully the comments he has and may receive regarding the proposed regulations relating to the computation of the credit under section 41(c) and the definition of qualified research under section 41(d), particularly regarding the "common knowledge" standard.[89]

Despite Congress's statements, in January 2001 Treasury and the IRS promulgated final regulations retaining the discovery test.[90] However, in response to taxpayer concerns about the final regulations, in the same month Treasury and the IRS published Notice 2001-19[91] announcing that they would review final regulations and reconsider comments previously submitted about the regulations. Notice 2001-19 also provided that on the completion of review, Treasury and the IRS would announce any changes to the final regulations in the form of proposed regulations.

In December 2001 Treasury and the IRS proposed new regulations eliminating the discovery test.[92] The preamble explained the change:

> Based upon the review of the comments, the statute and legislative history, Treasury and the IRS have determined that the definition of qualified research set out in [the 2001 final regulations] does not fully address Congress' concerns regarding the importance of research activities to the U.S. economy. Accordingly, Treasury and the IRS have eliminated in these proposed regulations the requirement that qualified research must be undertaken to obtain knowledge that exceeds, expands, or refines the common knowledge of skilled

---

[79]T.D. 8562, *94 TNT 194-3* ("The Treasury Department and the IRS agree that a taxpayer's knowledge that a product development project will be successful does not preclude the process of determining the appropriate design of the product from qualifying as research.").

[80]Reg. section 1.174-2(a)(1) and (2); *accord Union Carbide*, 97 TCM at 1258 ("Section 174 does not require that the technology be in the very beginning stages of development, only that the taxpayer be uncertain as to whether the technology will improve its product.").

[81]Section 41(d)(1)(B)(i); reg. section 1.41-4(a)(2)(ii).

[82]Reg. section 1.41-4(a)(4).

[83]*Id.*

[84]H.R. Rep. 99-426, at 178 (1985); S. Rep. No. 99-313, at 694-695 (1986).

[85]H.R. Rep. 99-426, at 180 (1985); S. Rep. No. 99-313, at 696 (1986).

[86]*United Stationers*, 163 F.3d at 443-445; *Norwest*, 110 T.C. at 491-495; *WICOR*, 116 F. Supp.2d at 1033.

[87]REG-105170-97, *Doc 98-34925*, *98 TNT 231-3*.

[88]Prop. reg. section 1.41-4(a)(3).

[89]H.R. Conf. Rep. No. 106-478, at 132 (1999).

[90]T.D. 8930, *Doc 2001-286*, *2000 TNT 250-3*; reg. section 1.41-4(a)(3) (later withdrawn).

[91]2001-1 C.B. 784, *Doc 2001-3114*, *2001 TNT 22-6*.

[92]REG-112991-01, *Doc 2001-31709*, *2001 TNT 251-35*.

professionals in a particular field of science or engineering. Rather, Treasury and the IRS believe that the requirement that qualified research be ''undertaken for the purpose of discovering information which is technological in nature is intended to distinguish technological research, which may qualify for the research credit, from non-technological research, which does not.''[93]

The 2001 proposed regulations provided:

Research is undertaken for the purpose of discovering information if it is intended to eliminate uncertainty concerning the development or improvement of a business component. Uncertainty exists if the information available to the taxpayer does not establish the capability or method for developing or improving the business component, or the appropriate design of the business component.[94]

New final regulations were issued in December 2003.[95] They adopted the relaxed formulation of the technological in nature test set forth in the 2001 proposed regulations and explicitly repudiated the discovery test.[96] Accordingly, it is now clear that the technological in nature test does not require that the taxpayer be seeking to 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.

d. Business component test. To satisfy the business component test, the research activity must relate to a new or improved function of a business component of the taxpayer, or to its performance, reliability, or quality.[97] A business component is any product, process, computer software, technique, formula, or invention that is to be either held for sale, lease, or license, or used in the taxpayer's trade or business.[98] Research relating to style, taste, or cosmetic or seasonal design factors is not undertaken for a qualified purpose.[99]

The TRA 1986 amendments established the business component test to respond to early data suggesting that taxpayers in non-technological industries such as fast food, hair styling, advertising, and financial products were claiming the research credit for the costs of improving the stylistic and other nonfunctional aspects of products.[100]

e. Process of experimentation test. The TRA 1986 amendments created the process of experimentation test to address concerns that taxpayers were taking ''the view that the costs of any trial and error procedure are eligible for the credit even though there may be little doubt about the outcome of the procedure.''[101] In those circumstances, lawmakers observed, ''true experimentation in the scientific or laboratory sense would not have to be undertaken to develop, test, and choose among viable alternatives.''[102]

The process of experimentation test addresses those concerns by requiring that substantially all the research activities constitute elements of a process of experimentation.[103] ''Substantially all'' means that 80 percent or more of the taxpayer's research activities for each business component, measured on a cost or other consistently applied reasonable basis, must constitute a process of experimentation for a qualified purpose.[104]

A process of experimentation is a process designed to evaluate one or more alternatives to achieve a result when the capability or method of achieving that result, or the appropriate design of that result, is uncertain at the beginning of the taxpayer's research activities.[105] The core elements of a process of experimentation are (1) the identification of uncertainty concerning the development or improvement of a business component; (2) the identification of one or more alternatives intended to eliminate that uncertainty; and (3) the identification and conduct of a process of evaluating the alternatives (through, for example, modeling, simulation, or a systematic trial and error method).[106]

The regulations do not detail how the regulatory provisions are to be applied to a given factual situation. Rather, as the preamble explains, Treasury and the IRS concluded that the application of the provisions ''will depend on the specific activities being claimed by a taxpayer as qualified research, the nature of the taxpayer's business and industry,

[93]2002-1 C.B. at 405.
[94]Prop. reg. section 1.41-(a)(3)(i).
[95]T.D. 9104, *Doc 2003-27005, 2003 TNT 247-3.*
[96]Reg. section 1.41-4(a)(3)(i) and (ii).
[97]Section 41(d)(3)(A); reg. section 1.41-4(a)(5)(ii).
[98]Section 41(d)(2)(B).
[99]Section 41(d)(3)(B); reg. section 1.41-4(a)(5)(ii).
[100]H.R. Rep. No. 99-426, at 178 (1985); S. Rep. No. 99-313, at 695 (1986).
[101]Treasury Report on Tax Simplification and Reform, *supra* note 74, at 301.
[102]H.R. Rep. No. 99-426, at 181 (1985); *accord* S. Rep. No. 99-313, at 696 (1986).
[103]Section 41(d)(1)(C); reg. section 1.41-4(a)(2)(iii).
[104]Reg. section 1.41-4(a)(6).
[105]Reg. section 1.41-4(a)(5).
[106]*Id.*

and the uncertainties being addressed by the taxpayer's research activities.''[107]

The following example in the regulations illustrates the application of the process of experimentation test in an industrial setting:

> *Facts*. X is engaged in the business of manufacturing food products and currently manufactures a large-shred version of a product. X seeks to modify its current production line to permit it to manufacture both large-shred and fine-shred versions of one of its food products. A smaller, thinner shredding blade capable of producing a fine-shred version of the food product, however, is not commercially available. Thus, X must develop a new shredding blade that can be fitted onto its current production line. X is uncertain about the design of the new shredding blade, because the material used in its existing blade breaks when machined into smaller, thinner blades. X engages in a systematic trial and error process of analyzing various blade designs and materials to determine whether the new shredding blade must be constructed of a different material from that of its existing shredding blade and, if so, what material will best meet X's functional requirements.
>
> *Conclusion*. X's activities to modify its current production line by developing the new shredding blade meets the requirements of qualified research as set forth in paragraph (a)(2) of this section. Substantially all of X's activities constitute elements of a process of experimentation because X evaluated alternatives to achieve a result in which the method of achieving that result, and the appropriate design of that result, were uncertain as of the beginning of the taxpayer's research activities. X identified uncertainties related to the development of a business component, and identified alternatives intended to eliminate those uncertainties. Furthermore, X's process of evaluating identified alternatives was technological in nature, and was undertaken to eliminate the uncertainties.[108]

2. Application of the qualified research tests.

a. Shrinking back rule. The above qualified research tests are applied first at the level of the overall business component addressed by the research (the product, process, computer software, technique, formula, or invention to be held for sale, lease, or license, or used by a taxpayer in its trade or business).[109] If the qualified research tests are not satisfied at the level of the overall business component, they are to be applied to the most significant subset of the business component.[110] This shrinking back process continues until either a subset of elements of the business component satisfy the qualified research tests or the most basic element of the component is reached and that element fails the tests.[111]

The shrinking back principle originated in the TRA 1986 amendments intended to deny the credit for nonexperimental product development costs. In the 1984 hearings, Treasury's acting assistant secretary for tax policy said:

> If the R&E activities relate to an entire product or process, then the development costs for the entire product are creditable. On the other hand, if the R&E activities relate only to a component part and the taxpayer incurred more than an insignificant amount of non-R&E development costs with respect to other aspects of the product or process, only the R&E costs related to the component will be eligible for the credit. Focusing on the particular component to which the R&E activities relate will prevent routine product development costs from qualifying for the R&E credit.[112]

Although the shrinking back rule originated as a rule of exclusion, it evolved into a rule of inclusion. In describing the shrinking back rule, the 2001 proposed regulations included the following language: ''If the requirements for credit eligibility are met at that first level, then some or all of the taxpayer's qualified research expenses are eligible for the credit.''[113] Commentators expressed concern that this language implied that not all of a taxpayer's QREs would be eligible for the credit by operation of the rule. The language was omitted from the 2003 final regulations. The preamble to the 2003 final regulations stated:

> This provision has been revised in these final regulations to clarify that the rule is not intended to exclude qualified research expenses from the credit, but rather is intended to ensure that expenses attributable to qualified research activities are eligible for the research credit for purposes of section 41(d)(1).[114]

---

[107]T.D. 9104.
[108]Reg. section 1.41-4(a)(5)(i).
[109]Section 41(d)(2)(A); reg. section 1.41-4(b)(2).
[110]Reg. section 1.41-4(b)(2).
[111]*Id.*
[112]Pearlman statement, *supra* note 43, at 35.
[113]Prop. reg. section 1.41-4(b)(2).
[114]T.D. 9104.

The final regulation itself states, ''The shrinking-back rule is not itself applied as a reason to exclude research activities from credit eligibility.''[115]

b. Special rule for production processes. Section 41(d)(2)(C) provides a special rule for production processes whereby ''any plant process, machinery, or technique for commercial production of a business component shall be treated as a separate business component and not as part of the business component being produced.'' The regulations provide the following additional guidance:

> In cases involving development of both a product and a manufacturing or other commercial production process for the product, research activities relating to development of the process are not qualified research unless the requirements of section 41(d) and this section are met for the research activities relating to the process without taking into account the research activities relating to the development of the product. Similarly, research activities relating to the development of the product are not qualified research unless the requirements of section 41(d) and this section are met for the research activities relating to the product without taking into account the research activities relating to the development of the manufacturing or other commercial process.[116]

Section 41(d)(2)(C) was enacted as part of TRA 1986. The legislative history says that the purpose of the special rule for production processes was to clarify that activities relating to planning and preparation for commercial production of a newly developed experimental product are ineligible for the credit unless those activities independently satisfy section 41(d)(1)'s qualified research requirements.[117]

c. Post-TRA 1986 legislative clarifications. When Congress extended the research credit in 1998, it took the opportunity to ''reaffirm the scope of qualified research.''[118] The House-Senate conferees offered three clarifications. First, they said that ''eligibility for the credit does not require that the research be successful — i.e., the research need not achieve its desired result.''[119] Second, they clarified that ''evolutionary research activities intended to improve functionality, performance, reliability, or quality'' are eligible for the credit.[120] Finally, the conferees said that ''research activities intended to achieve a result that has already been achieved by other persons but is not yet within the common knowledge (e.g., freely available to the general public) of the field'' are similarly eligible.[121]

Congress again addressed the scope of qualified research in the conference report to the 1999 credit extension:

> The conferees wish to affirm that qualified research is research undertaken for the purpose of discovering new information which is technological in nature. For purposes of applying this definition, new information is information that is new to the taxpayer, is not freely available to the general public, and otherwise satisfies the requirements of section 41. Employing existing technologies in a particular field or relying on existing principles of engineering or science is qualified research, if such activities are otherwise undertaken for purposes of discovering information and satisfy the other requirements under section 41.[122]

Notably, in each instance Congress's clarification expanded the concept of qualified research and admonished the IRS against administering the qualified research definition too restrictively.

3. Excluded activities. In addition to satisfying the four primary qualified research tests described above, an activity must not be excluded from the definition of qualified research. Qualified research does not include any of the following activities:

- *Research after commercial production* — research conducted after the beginning of commercial production of the business component, which includes preproduction planning for a finished business component, tooling up for production, trial production runs, troubleshooting faults in production equipment or processes, data accumulation, and debugging flaws.
- *Adaptation for customers* — research relating to the adaptation of an existing business component to a particular customer's requirement or need.
- *Duplication of existing business component* — research relating 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.

[115]Reg. section 1.41-4(b)(2).
[116]Reg. section 1.41-4(b)(1).
[117]S. Rep. No. 99-313, at 698 (1986); H.R. Rep. No. 99-426, at 179 (1985).
[118]H.R. Conf. Rep. No. 105-825, at 1548 (1998).
[119]*Id.*
[120]*Id.*
[121]*Id.*
[122]H.R. Conf. Rep. No. 106-478, *supra* note 89, at 132.

- *Efficiency surveys, market research, etc.* — any efficiency survey, activity relating to management function or technique, market research, routine data collection, or ordinary quality control inspection.
- *Foreign research* — research conducted outside the United States, Puerto Rico, or any possession of the United States.
- *Research in nonphysical sciences* — research in the social sciences, arts, or humanities.
- *Funded research* — research to the extent funded by any grant, contract, or otherwise by another person (or governmental entity).[123]

Initially, only three activities were specifically excluded from the definition of qualified research: foreign research, research in the social sciences and humanities, and funded research.[124] TRA 1986 expanded the list of excluded activities to include post-commercial production research, adaptation and duplication activities, and surveys and similar activities.[125] The addition of those new excluded activities was intended ''to exclude from the credit activities that would not by their nature result in technological innovation.''[126]

The statutory language describing the new excluded activities, as well as TRA 1986's legislative history, shows that Congress and Treasury believed those activities were inherently incapable of producing technological innovation and thus could never qualify for the research credit. The new excluded activities were described as ''nonresearch.''[127]

More recently, however, Congress, Treasury, and the IRS have incrementally narrowed the reach of the exclusions for post-commercial production research, adaptation, and duplication. As noted above, when it extended the research credit in 1998, Congress indicated that evolutionary research intended to improve the functionality, performance, reliability, or quality of a business component satisfies the definition of qualified research.[128] Congress also said that ''research activities intended to achieve a result that has already been achieved by other persons but is not yet within the common knowledge (e.g., freely available to the general public) of the field'' are eligible for the credit.[129] That clarification suggests that under some circumstances, research activities intended to duplicate a business component whose design is already known by another taxpayer, such as a competitor, would qualify for the research credit.

Further, regarding the exclusion for post-commercial production research, the 1998 proposed regulations clarified that:

> even after a product meets the taxpayer's basic functional and economic requirements, activities relating to the development of the manufacturing process still may constitute qualified research, provided that the development of the process itself separately satisfies the requirements of section 41(d) and this section, and the activities are conducted before the process meets the taxpayer's basic functional and economic requirements or is ready for commercial use.[130]

That clarification was retained in the 2001 proposed regulations and 2003 final regulations.[131]

Finally, and most importantly for taxpayers, the preamble to the 2003 final regulations says the post-commercial production, adaptation, and duplication exclusions do not apply to research activities otherwise satisfying the definition of qualified research:

> Some commentators requested additional clarification regarding the scope of the research after commercial production, adaptation, and duplication exclusions set out in section 41(d)(4)(A), (B), and (C), and reg. section 1.41-4(c)(2), (3), and (4) of the 2001 proposed regulations. After consideration of these comments, the Treasury Department and the IRS believe that the multitude of factual situations to which these exclusions might apply make it impractical to provide additional clarification that is both meaningful and of broad application. The Treasury Department and the IRS believe these three specific exclusions do not cover research activities that otherwise satisfy the requirements for qualified research.
>
> . . . As stated above, the Treasury Department and the IRS believe that the research after commercial production exclusion (as well as

[123]Section 41(d)(4); reg. section 1.41-4(c).

[124]ERTA, section 221 (former section 44F(d)).

[125]TRA 1986, section 231(b).

[126]Pearlman statement, *supra* note 43, at 35.

[127]*See, e.g.*, H.R. Rep. No. 99-426, at 178-179 (1985) (''The committee decision clarifies the distinction between research expenditures and certain nonresearch activities (post-research activities, adaptation, and surveys and studies.''); S. Rep. 99-313, at 696 (1986) (referring to the new exclusions as ''nonresearch''); H.R. Conf. Rep. No. 99-841, at II-69 to II-71 (1986) (same); Treasury Report on Tax Simplification and Reform, *supra* note 74, at 302 (''The Senate definition excludes a number of activities, such as reverse engineering and debugging, that, by their nature, will not result in technological innovation.'').

[128]H.R. Conf. Rep. No. 105-825, at 1548 (1998).

[129]*Id.*

[130]Prop. reg. section 1.41-4(c)(2)(iii).

[131]Prop. reg. section 1.41-4(c)(2)(iii); reg. section 1.41-4(c)(2)(iii).

> the adaptation and duplication exclusions) do not cover research activities . . . so long as such trials satisfy the requirements for qualified research.[132]

Thus, a research activity independently satisfying the qualified research tests of section 41(d)(1) is not rendered ineligible for the research credit by virtue of the post-commercial production, adaptation, or duplication exclusions. Rather, as long as the primary qualified research criteria are satisfied, a claimed research activity is eligible for the research credit even if it might otherwise fall within the ambit of one of those exclusions.

In administering the research credit, the IRS is bound to apply the 2003 final regulations, including the guidance set forth in the preamble. When a statutory term is ambiguous, Treasury regulations are given controlling weight unless they are arbitrary, capricious, or manifestly contrary to statute.[133] That judicial deference extends to guidance provided by the agency in the preamble.[134] The courts in *McFerrin*, *FedEx*, and *Union Carbide* held that the IRS was bound to apply the 2003 final regulations in resolving taxpayers' research credit claims, and they specifically cited the guidance provided by Treasury and the IRS in the preamble to those regulations.[135]

The 2003 final regulations apply to tax years ending on or after December 31, 2003.[136] However, Treasury and the IRS have indicated that for years ending before December 31, 2003, the IRS will not challenge return positions that are consistent with the 2003 final regulations.[137]

4. Internal use software.

a. TRA 1986 and legislative history. Before the research credit's enactment, the IRS had issued a revenue procedure concluding that some costs of developing computer software may be treated in a manner similar to costs incurred in product development that are subject to expensing under section 174.[138] Because ERTA defined qualified research by reference to section 174, taxpayers initially claimed substantial research credits for software development activities. While some of those expenditures were for innovative software packages developed for sale in the competitive computer marketplace, a significant portion were incurred for software developed for more routine internal uses such as inventory control, payroll, and accounting. Many taxpayers claiming the research credit for internal use software were in consulting, accounting, finance, and other service industries. However, the research credit under ERTA made no distinction between software developed for sale and for internal use.[139]

When the research credit was debated before Congress in the years leading up to TRA 1986, Treasury maintained that the development of internal use software should be creditable only if it satisfied higher standards than those governing other forms of product development. In a letter to Congress, the acting assistant secretary for tax policy said:

> If the R&E credit is extended and the definition of qualifying research revised, the credit should be available for innovative software applications. A higher standard, however, is appropriate for the costs incurred to develop software for use in the taxpayer's trade or business. For the credit to be available for the costs of developing internal use software, a taxpayer should demonstrate that the software being developed will achieve a significant increase in speed or decrease in costs, that significant risk exists that the software cannot be developed and that the software which would satisfy the taxpayer's objective is not commercially available.[140]

In response to Treasury's concerns, TRA 1986 excluded internal use software development from the definition of qualified research except to the extent provided in regulations or when that software is used in an otherwise qualified research activity or a production process satisfying the requirements for qualified research.[141]

---

[132]T.D. 9104.

[133]*Mayo Found. for Med. Educ. and Research v. United States*, 131 S. Ct. 704 (2011).

[134]*American Fed. of Gov't Employees AFL-CIO v. Gates*, 486 F.3d 1316, 1326-1327 (D.C. Cir. 2008) (stating that the court would defer to the agency's "reasonable interpretation and application of the statute as articulated in the preamble to the regulations"); *DHL Corp. v. Commissioner*, 285 F.3d 1210, 1222 (9th Cir. 2002), *Doc 2002-8946*, *2002 TNT 72-9* (relying on the preamble to interpret a Treasury regulation); *Central and South West Servs. Inc. v. U.S. EPA*, 220 F.3d 683, 689 n.2 (5th Cir. 2000) (A "declaration contained in the preamble to a final rule setting forth the Agency's final and binding interpretation of a statute qualifies as a reviewable regulation for purposes of judicial review.").

[135]*McFerrin*, 570 F.3d at 678; *FedEx*, 2009 WL 2032905 at *4-*6; *Union Carbide*, 97 TCM at 1254 ("We will not hold petitioner to a higher standard than the regulations require.").

[136]Reg. section 1.41-4(e).

[137]T.D. 9104.

[138]Rev. Proc. 69-21, 1969-2 C.B. 303.

[139]H.R. Hrg. 98-102, at 669-670 (Supplemental Submission of the American Electronics Association, Computer and Business Equipment Manufacturers Association, Scientific Apparatus Makers Association, and Semiconductor Industry Association submitted to the Ways and Means Committee, Oct. 30, 1984).

[140]Pearlman statement, *supra* note 43, at 54.

[141]TRA 1986, section 231(b) (enacting section 41(d)(4)(E)).

The TRA 1986 legislative history explained that internal use software development generally would be eligible for the research credit only if the software is used in qualified research apart from the software development itself or is a production process meeting the primary qualified research tests.[142] All other software development activities were ineligible except to the extent provided in Treasury regulations. The legislative history concluded:

> Accordingly, the costs of developing software are not eligible for the credit where the software is used internally, for example, in general and administrative functions (such as payroll, bookkeeping, or personnel management) or in providing noncomputer services (such as accounting, consulting, or banking services), except to the extent permitted by Treasury regulations.[143]

Congress envisioned that the regulations would allow the research credit for internal use software research if the taxpayer could establish the following factors in addition to showing that the primary qualified research tests were met:

> (1) That the software is innovative (as where the software results in a reduction in cost, or improvement in speed, that is substantial and economically equivalent); (2) that the software development involves significant economic risk (as where the taxpayer commits substantial resources to the development and also there is substantial uncertainty, because of technical risk, that such resources would be recovered within a reasonable period); and (3) that the software is not commercially available for use by the taxpayer (as where the software cannot be purchased, leased, or licensed and used for the intended purpose without modifications that would satisfy the first two requirements just stated).[144]

However, Congress did not intend the above three-part test to apply to research relating to the ''development costs of a new or improved package of software and hardware developed together by the taxpayer as a single product, of which the software is an integral part, that is used directly by the taxpayer in providing technological services in its trade or business to customers.''[145] For example, the special rules would not apply when a taxpayer develops a new or improved high technology medical or industrial equipment containing software that processes and displays data received by the instrument, or when a telecommunications company develops a package of new or improved switching equipment plus software to operate the switches.[146] The legislative history says that in those instances, eligibility for the research credit ''is to be determined by examining the combined hardware-software product as a single product, and thus the specific rule applicable to internal use computer software would not apply to the combined hardware-software product.''[147]

b. 1997 proposed regulations. In 1997 Treasury and the IRS proposed regulations setting forth the requirements for internal use computer software development to constitute qualified research.[148] Regarding the definition of internal use software, the 1997 proposed regulations stated: ''All pertinent facts and circumstances are to be considered in determining if computer software is developed primarily for the taxpayer's internal use.''[149]

The 1997 proposed regulations closely tracked the TRA 1986 legislative history and provided that internal use software development is eligible for the research credit only if it satisfies the primary qualified research tests, is not an excluded activity, and one of the following conditions is met: (1) The software is used in an activity independently constituting qualified research; (2) the software is used in a production process satisfying the primary qualified research criteria; or (3) the software satisfies a three-part high threshold of innovation test.[150] The three-part test, in turn, required the taxpayer to establish that:

> i. the software is innovative (as where the software results in a reduction in cost, or improvement in speed, that is substantial and economically equivalent);
>
> ii. the software development involves significant economic risk (as where the taxpayer commits substantial resources to the development and there is a substantial uncertainty, because of technical risk, that such resources would be recovered within a reasonable period); and
>
> iii. the software is not commercially available for use by the taxpayer (as where the software cannot be purchased, leased, or licensed and

[142] H.R. Conf. Rep. No. 99-841, at II-73 (1986).
[143] *Id.*; *accord* H.R. Rep. No. 99-426, at 182 (1985).
[144] *Supra* note 142.
[145] *Id.* at II-74.
[146] *Id.*
[147] *Id.*
[148] REG-209494-90, *Doc 97-274*, *97 TNT 1-6*.
[149] Prop. reg. section 1.41-4(e)(4).
[150] Prop. reg. section 1.41-4(e)(1) and (2).

used for the intended purpose without modifications that would satisfy the [first and second requirements above]).[151]

All facts and circumstances were to be considered in determining whether a taxpayer met the three-part high threshold of innovation test.[152]

The 1997 proposed regulations provided, however, that the three-part high threshold of innovation test would not apply to the development costs of a new or improved package of computer software and hardware developed together as a single product, of which the software is an integral part, that is used directly by the taxpayer in providing technological services to customers.[153] In those cases, eligibility for the credit was to be determined by examining the combined hardware-software product as a single product.[154]

c. 2001 final regulations. The 2001 final regulations, discussed above in connection with the discovery test, incorporated the internal use software rules of the 1997 proposed regulations, with several changes.[155]

Regarding the definition of internal use software, the 2001 final regulations modified the facts and circumstances approach of the 1997 proposed regulations and provided that whether software is for a taxpayer's internal use depended on the nature of the service provided by the taxpayer. Software intended to be used by a taxpayer internally — for example, software used in general and administrative functions or to provide non-computer services to customers such as accounting, consulting, or banking services — was to be considered internal use software.[156] Non-computer services were defined as services offered by a taxpayer to customers who do business with the taxpayer primarily to obtain a service other than a computer service, even if that other service is enabled, supported, or facilitated by computer or software technology.[157]

The 2001 final regulations adopted verbatim the three-part high threshold of innovation test and the exception for packages of software and hardware developed as a single product.[158]

However, the 2001 final regulations also had a new exception under which a taxpayer was not required to establish that internal use software used to provide non-computer services containing features or improvements not yet offered by the taxpayer's competitors satisfied the three-part test. The new exception applied when (1) the software was designed to provide customers a new feature for a non-computer service; (2) the taxpayer reasonably anticipated that customers would choose to obtain the non-computer service from the taxpayer (rather than from its competitors) because of the features of the service provided by the software; and (3) those features were not yet available (at the time the research was undertaken) from any of the taxpayer's competitors.[159] The non-computer services exception reflected the determination by Treasury and the IRS that "the development of software containing features or improvements that are not available from a taxpayer's competitors and that provide a demonstrable competitive advantage is more likely to increase the innovative qualities and efficiency of the U.S. economy (by generating knowledge that can be used by other service providers) than is the development of software used to provide noncomputer services containing features or improvements that are already offered by others."[160]

d. 2001 proposed regulations. In Notice 2001-19,[161] Treasury and the IRS announced that they would review the 2001 final regulations and they requested comments. In response, several commentators objected to the 2001 final regulations' internal use software provisions. Consequently, Treasury and the IRS made several changes to the internal use software rules when they proposed new regulations in December 2001.[162]

For the definition of internal use software, the 2001 proposed regulations provided that internal use software presumptively includes all software except that which is developed by or for the benefit of the taxpayer primarily to be commercially sold, leased, licensed, or otherwise marketed for separately stated consideration to unrelated third parties.[163] The 2001 proposed regulations retained the provision in the final regulations that excluded from the definition of internal use software computer software and hardware developed as a single product as well as software developed by a taxpayer to modify an acquired computer software and hardware package.[164]

The 2001 proposed regulations retained the general rule that to constitute qualified research, internal use software development activities must satisfy the primary qualified research tests as well

[151]Prop. reg. section 1.41-4(e)(5).
[152]Prop. reg. section 1.41-4(e)(6).
[153]Prop. reg. section 1.41-4(e)(3).
[154]*Id.*
[155]T.D. 8930.
[156]Reg. section 1.41-4(c)(6)(iii).
[157]Reg. section 1.41-4(c)(6)(iv)(B).
[158]Reg. section 1.41-4(c)(6)(ii)(C)(3) and -4(c)(6)(vi).
[159]Reg. section 1.41-4(c)(6)(v).
[160]2001-1 C.B. at 439.
[161]2001-1 C.B. 784.
[162]REG-112991-01, *Doc 2001-31709*, *2001 TNT 251-35*.
[163]Prop. reg. section 1.41-4(c)(6)(iv).
[164]Prop. reg. section 1.41-4(c)(6)(iii).

as the three-part high threshold of innovation test.[165] However, they modified the first prong of the three-part test by providing that internal use software is innovative if the software is intended to be unique or novel and is intended to differ in a significant and inventive way from prior software implementations or methods.[166] Treasury and the IRS said that the proposed change was ''an attempt both to update the definition of innovative, and to provide a more flexible definition with continuing application.''[167]

The 2001 proposed regulations eliminated the special rule in the final regulations for software used to deliver to customers non-computer services with features that are not yet offered by a taxpayer's competitors. Treasury and the IRS concluded ''that the computer software targeted by this rule generally would be credit eligible without this rule.''[168]

The 2001 proposed regulations provided 13 detailed examples illustrating the application of the foregoing rules.[169] In general, the examples show that the high threshold of innovation test involves a fact-intensive determination that takes into account several factors, including the taxpayer's intent, the competitive advantages created by the software, the resources committed to the software development, the technical and economic risks involved in the project, the comparability of the software to that developed or used by competitors, the comparability of the software to commercially available software, and the views of industry analysts.[170]

e. 2003 final regulations and subsequent events. The 2003 final regulations did not finalize the provisions in the 2001 proposed regulations on internal use software.[171] Announcement 2004-9 said:

> In light of the statute, the legislative history, the history of the regulations regarding internal-use software, and the comments received, the Treasury Department and the IRS have decided not to finalize in T.D. 9104 the provisions in the 2001 proposed regulations relating to internal-use software. Instead, the Treasury Department and the IRS are issuing this [advance notice of proposed rulemaking] to solicit further comments regarding the definition of internal-use software as well as other provisions affecting the qualification of internal-use software for the research credit.[172]

Announcement 2004-9 notified taxpayers that they could continue to rely on the internal use software provisions of either the 2001 final regulations or the 2001 proposed regulations.[173] However, the administrative announcement said that taxpayers electing to rely on the 2001 final regulations were required to apply the discovery test even though that test had been explicitly repudiated in the 2001 proposed regulations and the 2003 final regulations.[174] In *FedEx*, discussed below, the district court held that Announcement 2004-9 is not due substantial deference, because the ''attempt to require [the taxpayer] to adhere to the 'discovery test' embodied in the 2001 Final Regulations is contrary to the IRS' stated intent in adopting the 2003 Final Regulations and contrary to the IRS' stated understanding of Congressional intent.''[175]

D. Base Amount Computational Rules

1. Traditional base amount computation. As explained above, unless a section 280C(c)(3) election is in effect,[176] a taxpayer is entitled to a research credit equal to 20 percent of the excess, if any, of its QREs for the current tax year over a base amount.[177] The base amount is a benchmark of the taxpayer's research spending during years before the tax year for which the research credit is claimed. It is designed to ensure that taxpayers receive the research credit only when they have increased their qualified research spending above prior levels.

As originally enacted, the base amount was equal to the average of the taxpayer's annual QREs in the three tax years immediately preceding the credit year.[178] ERTA also provided a 50 percent limitation whereby the base amount could not drop below 50 percent of the QREs for the current tax year.[179]

In the early years of the credit, taxpayers complained that the rolling three-year base amount diminished the credit's incentive effect. While an increase in research spending in a given tax year would increase the credit for that year, it would also reduce the credit and resulting incentive effect in the following three years.[180] In 1989 Congress addressed those concerns by enacting a new definition

[165]Prop. reg. section 1.41-4(c)(6)(i) and (ii).
[166]Prop. reg. section 1.41-4(c)(6)(vi)(A).
[167]2002-1 C.B. at 407-408.
[168]*Id.* at 408.
[169]Prop. reg. section 1.41-4(c)(viii).
[170]*Id.*
[171]T.D. 9104.
[172]Announcement 2004-9, 2004-1 C.B. 441, *Doc 2004-2581*, *2004 TNT 26-13*.
[173]*Id.*
[174]*Id.*
[175]103 AFTR 2d at 2009-2726.
[176]*See supra* note 52.
[177]Section 41(a).
[178]ERTA, section 221(c)(1) (former section 44F(c)(1)).
[179]ERTA, section 221(c)(3) (former section 44F(c)(3)).
[180]H.R. Rep. No. 101-247, at 1199 (1989).

of base amount. The new provision defined a taxpayer's base amount by reference to its qualified research spending as a fixed percentage of its gross receipts during the 1984 through 1988 tax years, commonly referred to as the base period, indexed to the taxpayer's recent gross receipts.[181] Congress believed the index was an appropriate benchmark against which to measure taxpayers' research spending ''because businesses often determine their research budgets as a fixed percentage of gross receipts.''[182]

Under current law, the term ''base amount'' means the product of the taxpayer's fixed-base percentage and its average annual gross receipts for the four years preceding the credit year.[183] A taxpayer's fixed-base percentage is the percentage that the taxpayer's aggregate QREs during the 1984-1988 base period is of the taxpayer's aggregate gross receipts for that period.[184] Special computational rules apply to start-up companies.[185] The fixed-base percentage is rounded to 1/100 of 1 percent and cannot exceed 16 percent.[186]

The term ''gross receipts'' means the total amount, as determined under the taxpayer's method of accounting, derived by the taxpayer from all its activities and from all sources.[187] However, gross receipts do not include amounts representing returns or allowances, receipts from the sale or exchange of capital assets, repayments of loans or similar instruments, receipts from a sale or exchange not in the ordinary course of business, or amounts received for state and local taxes when the taxpayer merely collects and remits the tax to the taxing authority.[188] For a foreign corporation, gross receipts include only gross receipts that are effectively connected with the conduct of a trade or business within the United States, Puerto Rico, or U.S. possessions.[189]

The QREs and gross receipts used to compute a taxpayer's fixed-base percentage and base amount must be determined on a basis consistent with the definition of QREs and gross receipts for the credit year, without regard to the law in effect for the tax years taken into account in computing the fixed-base percentage or the base amount.[190] That principle is commonly referred to as the consistency requirement. It applies even if the period for filing a credit or refund claim has expired for any tax year taken into account in computing the fixed-base percentage or the base amount.[191] Thus, if a taxpayer changes its definition of QREs or gross receipts after computing its fixed-base percentage or base amount, it must adjust the QREs or gross receipts in its fixed-base percentage or base amount to conform to the definition used for the credit year.[192]

The minimum base amount is 50 percent of the taxpayer's QREs for the credit year.[193] Thus, the maximum amount of research credit that a taxpayer using the traditional base amount may receive in a given tax year is 10 percent of its QREs: the product of 50 percent of its total QREs and the 20 percent credit rate.

The future of the traditional base amount formula is uncertain. In its March report, Treasury expressed its view that the traditional base amount formula has outlived its usefulness and now is a source of complexity and compliance problems for both taxpayers and the IRS.[194]

2. Alternative base amount computations.

a. Alternative incremental credit. For tax years beginning after June 30, 1996, and before December 31, 2008, taxpayers could elect an alternative incremental credit in lieu of the traditional base amount computation described above.[195] Congress enacted the alternative incremental credit in 1996 to make the research credit available to more taxpayers.[196]

It was unnecessary under the alternative incremental credit to determine the taxpayer's QREs and gross receipts during the 1984-1988 base period. Rather, the alternative incremental credit was determined using three tiers of research credits computed with significantly reduced credit rates and predetermined fixed-base percentages.[197]

The Emergency Economic Stabilization Act of 2008 eliminated the alternative incremental credit for tax years beginning after December 31, 2008.[198]

b. Alternative simplified credit. For tax years beginning after December 31, 2006, taxpayers may elect an alternative simplified credit in lieu of the traditional base amount computation described above.[199] As with the alternative incremental credit,

[181] *Id.* at 1200.
[182] *Id.*
[183] Section 41(c)(1).
[184] Section 41(c)(3)(A).
[185] Section 41(c)(3)(B); reg. section 1.41-3(a).
[186] Section 41(c)(3)(C) and (D).
[187] Reg. section 1.41-3(c)(1).
[188] Section 41(c)(7); reg. section 1.41-3(c)(2).
[189] Section 41(c)(7); reg. section 1.41-3(c)(3).
[190] Section 41(c)(6); reg. section 1.41-3(d).
[191] Reg. section 1.41-3(d)(1).
[192] Reg. section 1.41-3(d)(2) (examples).
[193] Section 41(c)(2).
[194] 2011 Treasury report, *supra* note 2, at 8.
[195] Section 41(c)(4); reg. section 1.41-8.
[196] Small Business Protection Act of 1996, P.L. 104-188, section 1204; S. Rep. No. 104-281, at 40 (1996).
[197] Section 41(c)(4)(A)(i) through (iii).
[198] P.L. 110-343, Division C, section 301.
[199] Section 41(c)(5); reg. section 1.41-9(a), (b)(1).

Congress enacted the alternative simplified credit to encourage U.S. businesses that might otherwise be unable to avail themselves of the research credit to continue and expand their research programs.[200] An election to claim the alternative simplified credit is made by completing the portion of Form 6765, ''Credit for Increasing Research Activities'' (or a successor form), relating to the election of the alternative simplified credit, and attaching the completed form to the taxpayer's timely filed (including extensions) original return for the tax year to which the election applies. An election under section 41(c)(5) may not be made on an amended return or revoked except with the consent of the commissioner.[201]

The alternative simplified credit creates research credit opportunities for taxpayers with little or no benefit under the traditional and alternative incremental credit regimes. Gross receipts are completely eliminated from the calculation. For tax years beginning after December 31, 2006, and ending before January 1, 2009, the alternative simplified credit is equal to 12 percent of the amount by which the QREs for the tax year exceed 50 percent of the average QREs from the prior three years.[202] Effective for tax years ending after December 31, 2008, the credit rate is increased to 14 percent.[203] If the taxpayer has no QREs in any of the preceding three tax years, the credit is equal to 6 percent of the QREs for the current tax year.[204]

The Obama administration has proposed increasing the alternative simplified credit rate from 14 to 17 percent. Treasury said that ''will provide a larger incentive to increase research and simplify the credit by encouraging firms to switch to the alternative simplified tax credit base.''[205]

A taxpayer need not increase its annual QREs to obtain the alternative simplified credit. For example, a taxpayer that has $10 million in QREs in the current tax year and also had an average of $10 million QREs for the three prior years is entitled to a credit equal to $700,000 (14 percent x ($10 million - $10 million x 50 percent)).

E. Special Computational Rules

In determining the amount of the research credit, all members of the same controlled group of corporations and all trades or businesses (whether or not incorporated) under common control are treated as a single taxpayer.[206] The term ''controlled group of corporations'' generally means a chain of corporations connected through stock ownership when a parent corporation owns at least 50 percent of the combined voting power of stock of the other corporations.[207] The amount of any credit allowable to each entity in the controlled group or under common control shall be its proportionate shares of expenses giving rise to the credit.[208]

Special rules also apply when a business changes hands. QREs for periods before the change of ownership generally are treated as transferred with the trade or business that gave rise to those expenses.[209] The section 41(f) rules are intended to facilitate an accurate computation of base period expenditures and the credit by attributing QREs to the appropriate taxpayer.

Additional special computational rules apply to short tax years.[210]

F. Substantiation

Section 6001 generally requires that taxpayers keep records in compliance with the rules and regulations prescribed by the Treasury secretary. That requirement entails keeping ''permanent books of account or records . . . as are sufficient to establish the amount of gross income, deductions, [or] credits.''[211] Taxpayers claiming the research credit must retain records in ''sufficiently usable form and detail to substantiate that the expenditures claimed are eligible for the credit.''[212] Beyond that general statement, the regulations do not specify the types of records that must be kept.

The above regulatory requirements must be read in conjunction with guidance from both Congress and the IRS that record-keeping requirements not be overly burdensome for taxpayers claiming the research credit. As background, the 1998 proposed regulations defined a process of experimentation to include the recording of the results of scientific experiments in a manner appropriate for the particular field of science in which the experiment was conducted.[213] When the research credit was extended in 1999, Congress made clear that the credit should not impose unreasonable record-keeping requirements: ''The conferees also are concerned

[200]Tax Relief and Health Care Act of 2006, P.L. 109-342, section 104; H.R. Rep. No. 109-304, at 33-34 (2005).
[201]Reg. section 1.41-9(b)(2) and (3).
[202]Section 41(c)(5)(A) before amendment by the Emergency Economic Stabilization Act of 2008, P.L. 110-343, Division C section 301.
[203]Section 41(c)(5)(A) as amended.
[204]Section 41(c)(5)(D).
[205]2011 Treasury report, *supra* note 2, at 9.
[206]Section 41(f)(1); reg. section 1.41-6.
[207]Sections 41(f)(5) and 1563(a).
[208]Section 41(f)(1); reg. section 1.41-6.
[209]Section 41(f)(3).
[210]Section 41(f)(4).
[211]Reg. section 1.6001-1(a).
[212]Reg. section 1.41-4(d).
[213]REG-105170-97; prop. reg. section 1.41-4(a).

about unnecessary and costly taxpayer record keeping burdens and reaffirm that eligibility for the credit is not intended to be contingent on meeting unreasonable record keeping requirements.''[214]

In response to Congress's comments, the 2001 final regulations retained but relaxed the record-keeping requirement. They required taxpayers to:

> prepare and retain written documentation before or during the early stages of the research project that describes the principal questions to be answered and the information the taxpayer seeks to be answered and the information the taxpayer seeks to obtain that exceeds, expands or refines the common knowledge of skilled professionals in the relevant field of science or engineering.[215]

After reconsidering the 2001 final regulations, Treasury and the IRS eliminated the record-keeping requirement in the 2001 proposed regulations. The preamble to the 2001 proposed regulations said:

> Treasury and the IRS have re-evaluated whether a research credit-specific documentation requirement is warranted and have concluded that the high degree of variability in the objectives and conduct of research activities in the United States compels a conclusion that taxpayers must be provided reasonable flexibility in the manner in which they substantiate their research credits. Accordingly, Treasury and the IRS have concluded that the failure to keep records in a particular manner (so long as such records are in sufficiently usable form and detail to substantiate that the expenditures claimed are eligible for the credit) cannot serve as a basis for denying the credit. Treasury and the IRS have decided that the rules generally applicable under section 6001 provide sufficient detail about required documentary substantiation for purposes of the research credit. Consequently, no separate research credit-specific documentation requirement is included in these proposed regulations.[216]

Current IRS guidance similarly provides that research credit eligibility ''is not intended to be contingent on meeting unreasonable recordkeeping requirements.''[217] Rather, taxpayers are ''to be provided reasonable flexibility in the manner in which they substantiate their research credits.''[218]

The Tax Court in *Eustace*[219] and the district court in *Research Inc.*[220] disallowed research credit claims when the taxpayers completely failed to substantiate their claimed QREs. More recently, however, courts have held that the lack of contemporaneous documentation or other substantiation is not itself a basis for complete disallowance of the research credit if a taxpayer has established that it conducted qualified research activities. Rather, the long-standing *Cohan*[221] rule requires that if qualified research activities have occurred, the amount of the allowable research credit must be estimated.[222] Those recent cases are discussed below.

III. Recent Cases and Implications

A. Case Summaries

1. *McFerrin*. In *McFerrin*, the taxpayer conducted testing and research to determine whether the chemicals it manufactured were within the guidelines established by customers. In finding that the taxpayer had not substantiated its right to the research credit, the district court emphasized that the taxpayer did not claim the research credit on its original return but rather only on amended returns after commissioning a research tax credit study from a third-party consulting firm. The district court concluded that the study was entitled to no weight because it consisted largely of consulting firm staff conducting ''superficial on-site meetings'' with the taxpayer's personnel, and the consulting firm did not give the employees a definition of research for purposes of the credit.[223] Further, the taxpayer's records did not substantiate its claims regarding the number of employees who worked on the projects, the amount of time spent, or the novelty of the projects. Having found that the taxpayer failed to establish that it engaged in qualified research activities, the district court held that it

---

[214]H.R. Conf. Rep. No. 106-478, at 132 (1999); *accord* S. Rep. No. 106-201, at 9 (1999).

[215]T.D. 8930 at 438; reg. section 1.41-4(d)(1).

[216]REG-112991-01.

[217]IRS Appeals Technical Guidance Research Credit Team, Section 41 Research Credit, Substantiating Research and Experimentation Expenditures, Part II.B., *reprinted at* ''IRS Draft Report Outlines Substantiation Requirements for Research Credit'' (Feb. 23, 2006), *Doc 2007-9075*, *2007 TNT 69-6*.

(Footnote continued in next column.)

[218]*Id.*

[219]81 TCM at 1373 (''We note at the outset that petitioners' reconstruction of qualifying expenses was unreliable, inaccurate, incomplete, and wholly insufficient to establish what various workers did and whether such expenses qualify for the research credit.'').

[220]76 AFTR 2d para. 95-5688, at *3 (''In short, in the absence of some evidence that the amounts of qualified research expenditures attributable to both lines of its products are an accurate, the taxpayer is barred from claiming the credit.'').

[221]*Cohan v. Commissioner*, 39 F.2d 540 (2d Cir. 1930).

[222]*McFerrin*, 570 F.3d at 675, 679; *Union Carbide*, 97 TCM at 1272; *Fudim*, 67 TCM at 3012-3013 (1994).

[223]2008-2 USTC para. 50,583, at *2.

could not estimate the expenses that were QREs under *Cohan* and that the taxpayer was not entitled to any research credit.[224]

The Fifth Circuit vacated that opinion and remanded because the district court had erred in applying the discovery test in determining whether the taxpayer's activities constituted qualified research.[225] The Fifth Circuit held that the more liberal section 174 test from the 2003 final regulations should have been applied instead. That test merely requires that research be "intended to eliminate uncertainty concerning the development or improvement of a business component."[226] The court further held that even though the taxpayer failed to provide adequate documentation to substantiate the costs associated with the research, the costs should be estimated under *Cohan* if the taxpayer could show activities that were qualified research.

2. *Union Carbide*. In *Union Carbide*,[227] the Tax Court considered whether Union Carbide Corp. (UCC), a U.S.-based chemicals and plastics manufacturer, was entitled to research credits for costs incurred in conducting five research projects at domestic UCC manufacturing plants in 1994 and 1995. Each of the five projects involved an attempt to develop or improve a chemical production process.

The Tax Court determined that two of the five manufacturing plant-based projects satisfied the primary qualified research tests of section 41(d)(1) and were not excluded from the definition of qualified research under section 41(d)(4). Of the three projects the court held were not qualified research, it found that two failed the section 174 test because of a lack of uncertainty and one failed the process of experimentation test. Citing *Black's Law Dictionary*, the Tax Court set a high standard for the process of experimentation requirement, arguably unsupported by the statute or regulations:

> To satisfy the process of experimentation test, the taxpayer should develop a hypothesis as to how a new alternative might be used to develop a business component, test that hypothesis in a scientific manner, analyze the results of the test, and then either refine the hypothesis or discard it and develop a new hypothesis and repeat the previous steps.[228]

On calculating the base amount, the Tax Court held that UCC had satisfied the section 41(c)(4) consistency rule by proving its 1984-1988 plant-based qualified research activities and QREs. Before the trial, the Tax Court had ordered that the consistency rule should be applied separately for each member of UCC's consolidated group rather than for the consolidated group as a whole. The Tax Court sustained that ruling as part of its opinion.[229] Thus, UCC was required to present evidence of the revised base period computations for only the legal entity for which additional credits were claimed, the parent entity UCC. UCC proved its base period qualified research activities and QREs using a combination of contemporaneous documentation, the testimony of fact witnesses who worked at UCC during the 1984-1988 base period, and the opinions of a scientific expert witness and a forensic accounting expert witness.[230] The Tax Court rejected the IRS's argument that section 41(c)(4) requires a taxpayer to use the same types of documents to identify qualified research in the base period as it used to identify qualified research in the claim year.[231] Ultimately, under the reasoning of *Cohan*,[232] the Tax Court found that UCC properly included in its base amount all activities that were similar to the two credit-year qualified research projects.[233]

However, the Tax Court disallowed the majority of the QREs claimed by UCC for the two qualified research projects. UCC had claimed as supply QREs the costs of feedstocks and other raw materials used during the plant-based qualified research activities. The Tax Court agreed that the two qualified research projects "could not have occurred if UCC had not purchased the raw materials it used in its production process."[234] However, citing the special rule of section 41(d)(2)(C) for production processes, the Tax Court reasoned that when a taxpayer conducts qualified research on a production process, the costs of supplies the taxpayer would have purchased even if qualified research had not been undertaken relate to the nonexperimental product business component and are not QREs. The business components addressed by UCC's qualified research activities were chemical production processes. The Tax Court disallowed UCC's claimed supply costs based on its finding that UCC would have incurred those costs to make nonexperimental products regardless of whether the process-focused qualified research was conducted.[235] The Tax Court

[224] *Id.*
[225] 570 F.3d at 676.
[226] *Id.* (quoting reg. section 1.41-4(a)(3)(i)).
[227] 97 TCM 1207. The authors represented the taxpayer in *Union Carbide*. All information in this report is a matter of public record.
[228] *Id.* at 1256.
[229] *Id.* at 1266-1267.
[230] *Id.* at 1240-1252.
[231] *Id.* at 1267-1268.
[232] 39 F.2d at 543-544.
[233] 97 TCM at 1272.
[234] *Id.* at 1273.
[235] *Id.* at 1273-1274.

distinguished UCC's claim from two cases supporting the credit eligibility of supply costs incurred in manufacturing research[236] because in those cases, ''the research related to an experimental product and not the process of producing the product.''[237]

Union Carbide is subject to appeal, and some or all of the Tax Court's conclusions might be overturned.

3. *TG Missouri*. *TG Missouri*[238] involved a taxpayer's claim that the costs of production molds it purchased from third-party toolmakers and sold to its customers were creditable supply QREs. The taxpayer was in the business of manufacturing injection-molded component parts, such as steering wheels and air bags, for automotive customers. After receiving a customer request to manufacture a new part, the taxpayer would in many instances contract with a third-party toolmaker to build a production mold for use in the mass production of the component part desired by the customer. For production molds sold to customers, the taxpayer included the costs paid to the third-party toolmakers as supply QREs. Section 174(c) excludes from section 174 treatment expenses for the acquisition or improvement of property whose character is subject to the depreciation allowance under section 167. The IRS argued that because the production molds were of a character that could be depreciated by a taxpayer, even if a particular taxpayer did not depreciate them, they were not eligible for expensing under section 174 and therefore did not qualify as supply QREs under section 41(b)(2)(C). The Tax Court disagreed with the IRS. It held that the section 174(c) exclusion applies only to property that is depreciable in the hands of the taxpayer.[239] Because the taxpayer took the research credit only for production molds it had treated as inventory and sold to its customers, none of those molds could be depreciated by the taxpayer. Applying section 41 ''as written and according to its statutory terms,''[240] the Tax Court concluded that the taxpayer ''properly included the costs of the production molds it purchased from third-party toolmakers as the cost of supplies in calculating the section 41 research credit.''[241]

4. *Trinity Industries*. At issue in *Trinity Industries*[242] was whether expenses incurred in developing prototype ships to be sold to customers were QREs. As the first step in its analysis, the district court found that each of the vessels qualified as a business component under section 41(d)(2)(B), even though each vessel was built by the taxpayer for its customer under a written contract. The district court also found that the taxpayer's process for developing the prototype vessels involved significant research effort. Because the business component was the entire vessel, the district court concluded that if the prototype was sufficiently experimental, all the costs, including items such as insurance, ''are properly considered research expenditures in that the business component — the ship — could not have been developed without them.''[243] However, to treat any expenses as QREs, the taxpayer had to show that 80 percent or more of a prototype vessel was part of a process of experimentation. The district court was unable to apply the shrinking back rule of reg. section 1.41-4(b)(2) because the taxpayer offered no evidence associated with any subset of the vessels. Thus, either all the expenses for a particular prototype would be QREs or none would. Ultimately, the district court found that only two of the six vessels at issue met the 80 percent standard. Both of those ships required an all-new design from the hull up, and one was unlike any other vessel in the world. Regarding a third vessel, the court found that a significant portion of the costs was part of a process of experimentation, but it had ''substantial uncertainty regarding the 80 percent threshold'' and concluded that the taxpayer had not met its burden of proof.[244]

Trinity Industries is subject to appeal, and some or all of the district court's conclusions might be overturned.

5. *Deere & Co.* Two recent cases have involved the calculation of gross receipts for purposes of determining the research credit. In *Deere & Co.*,[245] the Tax Court held that a taxpayer is required to include income from foreign branches in gross receipts for purposes of calculating its research credit. The taxpayer had argued that some income of its foreign branches should be excluded from gross receipts by analogy to section 41(c)(6). That section provides that for a foreign corporation, only gross receipts

[236] *Lockheed Martin Corp. v. United States*, 49 Fed. Cl. 241 (2001), *Doc 2001-11360*, *2001 TNT 78-72*; *Consoltex Inc. v. R*, [1997] 2 C.T.C. 2846.

[237] 97 TCM at 1274.

[238] 133 T.C. 278.

[239] *Cf. Ekman v. Commissioner*, 184 F.3d 522, 526 (6th Cir. 1999), *Doc 1999-19821*, *1999 TNT 111-16* (holding that a car engine used in research was not a section 174 expense because it was depreciable in nature, even though the taxpayer was intentionally destroying the engine, and holding that the ''character of the property, not the use of the property, is critical to the determination of whether an expense is deductible or only depreciable'').

[240] 133 T.C. at 288.

[241] *Id.* at 297.

[242] 691 F. Supp.2d 688.

[243] *Id.* at 697.

[244] *Id.* at 696.

[245] 133 T.C. 246.

that are effectively connected with the conduct of a trade or business within the United States, Puerto Rico, or any U.S. possession are taken into account. Noting that the ''silence of Congress is strident,'' the Tax Court found that if Congress had wanted to exclude income from foreign branches from gross receipts, it would have done so explicitly.[246]

6. *Procter & Gamble*. In *Procter & Gamble*,[247] the district court held that under section 41(f), a taxpayer is not required to include receipts from intercompany transactions in its gross receipts for purposes of computing the research credit. Section 41(f)(1)(A) provides that in determining the amount of the research credit, ''all members of the same controlled group of corporations shall be treated as a single taxpayer.'' Relying on ILM 200620023,[248] the IRS argued that for foreign subsidiaries, section 41(f) applies only to research expenditures, not gross receipts. The district court rejected the IRS's argument based on the plain language of the statute and regulations, neither of which distinguish between calculations of QREs and gross receipts or between international and domestic intercompany transfers. The district court concluded that for a controlled group of corporations, both QREs and gross receipts should be determined on a single-taxpayer basis.[249]

Since *Procter & Gamble*, the IRS has changed its position on this issue. In *Hewlett-Packard*,[250] a research credit case pending in the Tax Court, the IRS filed a response indicating that it did not object to granting the taxpayer partial summary judgment on the question whether the taxpayer may exclude amounts accrued from controlled foreign subsidiaries in calculating section 41(c)(1)(B) average annual gross receipts.[251]

7. *FedEx*. At issue in *FedEx*[252] was which regulations applied in determining whether expenses were incurred to develop a new and innovative computer business system for a taxpayer's internal use. The taxpayer filed a motion for partial summary judgment asking the district court to hold that the applicable tests were the internal use software tests of the 2001 final regulations, but not including the discovery test that had been repudiated in the 2001 proposed regulations and the 2003 final regulations. Relying on Announcement 2004-9, the government argued that a taxpayer seeking research credits for internal use software could elect to rely on the 2001 final regulations, but if it did so, it had to comply with all the 2001 final regulations' provisions, including the discovery test. As discussed above, the 2001 discovery test was eliminated in the 2003 final regulations, which required only that research ''be intended to eliminate certain uncertainty concerning the development or improvement of a business component.''[253] The district court held that the IRS's insistence that the taxpayer follow the discovery test was contrary to the IRS's own view of the legislative history and the intent of the 2003 final regulations. Accordingly, the court concluded that the taxpayer could rely on the 2003 discovery test and the 2001 internal use software test.[254]

The government filed a motion asking the district court to reconsider its ruling. In its reconsideration motion, the government argued that the final 2003 regulations removed the internal use software test provided in the 2001 final regulations, and therefore that test was an inappropriate legal standard to evaluate FedEx's claimed QREs. In an unpublished order issued in June, the district court denied the government's motion and reaffirmed its earlier decision.[255] LB&I's position continues to be that *FedEx* was wrongly decided and that a taxpayer electing under Announcement 2004-9 to be governed by the 2001 final regulations must follow the discovery test. In our experience, however, the Appeals Office assigns most of the litigating hazards on the issue to the IRS rather than to taxpayers.

B. Implications for Taxpayers

The above cases have significant implications for taxpayers claiming the research credit or defending research credit claims. They include the following:

Discovery Test

- For non-internal-use software claims, the discovery test set forth in the 2001 final regulations and pre-2002 case law is no longer applicable, and taxpayers need not show that the research seeks to obtain information that exceeds, expands, or refines the common knowledge of the skilled professionals in the relevant field of science or engineering in which the taxpayer is performing the research (*McFerrin*).
- For internal use software claims, taxpayers may elect to rely on the internal use software rules of the 2001 final regulations but are not

[246] *Id.* at 264.
[247] 2010-2 U.S.T.C. para. 50,554.
[248] *Doc 2006-9763*, *2006 TNT 98-19*.
[249] *Id.* at 14-16.
[250] *Hewlett-Packard Co. v. Commissioner*, Nos. 21976-07, 10075-08 (T.C. Sept. 7, 2010).
[251] Response by Respondent to Petitioner's Motion for Partial Summary Judgment on Research Credit Issues, *Hewlett-Packard Co.*, Nos. 21976-07, 10075-08, *Doc 2010-25713*, *2010 TNT 233-31*.
[252] 2009-1 USTC para. 50,435.
[253] *Id.*
[254] *Id.*
[255] Order dated June 27, 2011, *FedEx Corp. v. United States*, Case 2:08-cv-02423-SMH-tmp (W.D. Tenn.).

required to satisfy the discovery test set forth in those regulations (*FedEx*). The government, however, disagrees with the district court's holding. In cases outside the Western District of Tennessee, the government can be expected to argue that taxpayers electing to be governed by the internal use software rules of the 2001 final regulations must satisfy the more rigorous discovery test.

Substantiation

- Taxpayers are not required to prove their qualified research activities and QREs solely with contemporaneous documentation. Rather, under the principles of *Cohan*, taxpayers may use a combination of contemporaneous documentation, testimony of fact witnesses, opinions of expert witnesses, and reasonable judgments and estimates to substantiate their research activities and costs (*McFerrin* and *Union Carbide*).
- When a taxpayer establishes that it engaged in qualified research activities, a court should use the best available information to estimate the taxpayer's QREs and compute the research credit to which it is entitled (*McFerrin*).
- Despite the above principles, to the extent that a taxpayer affirmatively relies on a study conducted years after the tax years in which the research was performed to substantiate its research credits, the study will be closely scrutinized by the government and the trial court (*McFerrin*).

Qualified Research

- Qualified research can occur in a commercial manufacturing setting (*Union Carbide*).
- The process of experimentation test may require taxpayers to follow a relatively formal scientific method in performing and documenting their research, although that requirement is not found in the statute or regulations (*Union Carbide*).
- If less than 80 percent of a taxpayer's activities in connection with a business component constitute qualified research, the burden is on the taxpayer to provide sufficient evidence to allow the fact-finder to shrink back the business component to the subset for which the qualified research requirements are satisfied (*Trinity Industries*).
- If more than 80 percent of a taxpayer's activities relating to a business component employ a process of experimentation and otherwise constitute qualified research, all costs incurred in developing or improving the business component are eligible to be QREs (*Trinity Industries*).

QREs

- Regardless of whether the business component addressed by qualified research is a product or a process, the supply costs and wages incurred to develop or improve the experimental business component are QREs, even if the taxpayer ultimately sells the product (*Union Carbide*, *TG Missouri*, and *Trinity Industries*).
- Supplies that a taxpayer accounts for as inventory and that are not depreciable in the hands of the taxpayer are eligible to be treated as creditable QREs and are not excluded by section 174(c), even if the supplies would be depreciable in the hands of another taxpayer (*TG Missouri*).

Other Rules

- The consistency requirement of section 41(d)(5) applies at the legal entity level as opposed to the consolidated group level (*Union Carbide*).
- A taxpayer must include income from foreign branches in its gross receipts for purposes of calculating the research credit (*Deere & Co.*).
- A taxpayer is not required to include receipts from intercompany transactions in its gross receipts for purposes of computing the research credit (*Procter & Gamble*).

The above implications are subject to the important qualification that *Union Carbide*, *Trinity Industries*, and *FedEx* may be appealed.

IV. Conclusion

Whether an activity is qualified research and whether a cost is a QRE are inherently subjective, fact-intensive determinations. Further, in light of perceived taxpayer abuse in recent years, LB&I compliance teams closely scrutinize research credit claims and are institutionally predisposed to disallow those claims unless the taxpayer provides substantial evidence supporting its entitlement to the credit. For those reasons, the research credit is likely to remain a source of controversy between taxpayers and the IRS. The best way for taxpayers to avoid or successfully resolve those controversies is to fully understand the statutory and regulatory rules governing research credit eligibility and the key principles established in the case law. It is hoped that this report is helpful to taxpayers in achieving those objectives.