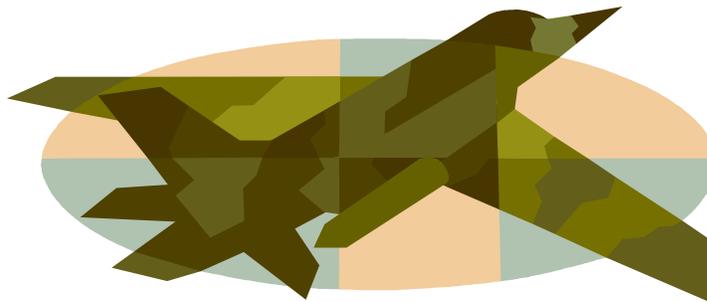
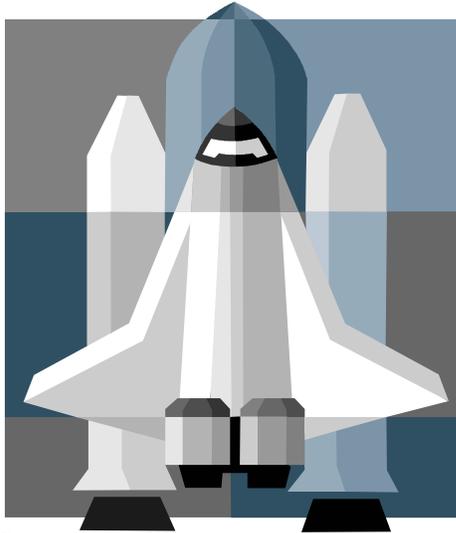


Aerospace Industry Research Credit Audit Technique Guide

January 28, 2005



This document is not legal precedent and should not be relied upon as such.

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I. Introduction

Why is there a need for an Aerospace Research Credit Audit Technique Guide (“ATG”)? The Aerospace Industry is unique. It has its own activities, terms, definitions, acronyms, documentation requirements, procedures, and regulations, which are peculiar only to the Aerospace Industry. Because the ATG zeroes in on industry specific matters, it gives background and analysis in addressing research credit issues specific to the Aerospace industry and therefore provides direction to the Aerospace examiner not covered in other audit technique guides.

A. Focus of Aerospace ATG

The focus of this document is to highlight proven audit techniques to assist those individuals who are responsible for the examination of the research credit claimed by taxpayers in the Aerospace Industry. The ATG focuses on those items an examiner would typically encounter in the review of Aerospace research credit activities. Ultimately, the goal of the ATG is to provide the reader with industry related information and tools to make an informed research credit analysis and determination.

This document is not legal precedent and should not be relied upon as such. Also, the ATG is not designed to remove the discretion given to managers and/or agents in the application of a variety of audit techniques or procedures appropriate to any given examination. Rather, the ATG is designed to increase the efficiency of the examination team by (1) providing an overview of pertinent Aerospace activities which may be the subject of claimed research, (2) identifying audit areas which historically have proven to contain the highest probability for taxpayer errors, and (3) providing suggested steps which may be useful in determining whether an expenditure meets the requirements of a qualified research expenditure.

B. Applicability of Aerospace ATG

The ATG applies to those companies that contract with the U.S. Government and/or the commercial sector to design, develop, manufacture and deliver Aerospace products. The contracted for items in many instances are tailor made to meet the customer’s unique requirements, specifications or needs.

Aerospace contractors conduct both independent research and research that is directly related to performance pursuant to a contract.

C. Industry Overview/Description

The term Aerospace Industry is a misnomer in the sense that the industry includes more than just aircraft airframe manufacturers. The industry also includes, in part, manufacturers of aircraft engines, avionics, electronic systems, radar, missiles, satellites, spacecraft, satellite and spacecraft launch vehicles and even shipbuilding. This would include manufacture for military or commercial application.

II. Contracting

A. General

While Aerospace contractors conduct independent research, a substantial portion of the research claimed by Aerospace contractors is research that is performed pursuant to contracts. Because the aerospace products listed above are generally not purchased as commercial-off-the-shelf (“COTS”) items, the customer must contract for the products’ design, development, and production. At a minimum, customization is usually involved.

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The issue confronting Aerospace examiners is whether the contracted for activities are qualified research. An understanding of the contracting process is a useful tool in assisting the examiner in answering the contracting activity issue.

When Aerospace contractors contract with the U.S. Government, the contracts are generally governed by the Federal Acquisition Regulations System. Contracts with non-Government customers are generally governed by State law.

1. Government Contracting

The Federal Acquisition Regulations System is established for the codification and publication of uniform policies and procedures for acquisition by all United States Government executive agencies. The Federal Acquisition Regulations consist of the Federal Acquisition Regulation (“FAR”), which is the primary document, and agency acquisition regulations that implement or supplement the FAR.

An agency head may issue or authorize the issuance of agency acquisition regulations that implement or supplement the FAR and incorporate, together with the FAR, agency policies, procedures, contract clauses, solicitation provisions, and forms that govern the contracting process or otherwise control the relationship between the agency and contractors or prospective contractors.

Agency acquisition regulations implementing or supplementing the FAR are for:

- (a) The military departments and defense agencies, issued subject to the authority of the Secretary of Defense (Defense Federal Acquisition Regulation Supplement [“DFARS”]);
- (b) NASA activities, issued subject to the authorities of the Administrator of NASA; and
- (c) The civilian agencies other than NASA, issued by the heads of those agencies subject to the overall authority of the Administrator of General Services or independent authority the agency may have.

The FAR System does not include internal agency guidance where an agency head issues or authorizes the issuance of internal agency guidance at any organizational level (e.g., designations and delegations of authority, assignments of responsibilities, work-flow procedures, and internal reporting requirements).

Knowledge of the FAR, DFARS and, to a lesser extent, NASA’s procurement regulations is fundamental to interpreting Aerospace Government contracts for which the research credit has been claimed.

2. Commercial Contracting

State law, including the Uniform Commercial Code as adopted by the States, is generally the legal framework that controls and sets forth the rules or requirements for contracting among private parties. The FAR and DFARS are not applicable to commercial contracting, unless the contracting parties agree to incorporate into the contract FAR and/or DFARS provision(s).

B. Contract Types

Contract Categories - There are two broad categories of contracts: (1) fixed price contracts and (2) cost reimbursement contracts. The specific contract types, within the broad categories, range from Firm-Fixed-Price (FFP), in which the contractor has full responsibility

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for the performance cost and the resulting profit (loss), to Cost-Plus Fixed-Fee (CPFF), in which the contractor has minimal responsibility for the performance cost and the negotiated fee is fixed. In between are various incentive contracts, in which the contractor's responsibility for the performance cost and the profit or fee incentives offered are tailored to the uncertainties involved in contract performance.

1. Fixed-Price Family of Contracts

A type of contract which provides for a firm price or, in appropriate cases, an adjustable price.

Firm-Fixed-Price (FFP) - Provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract. This type of contract places upon the contractor maximum risk and full responsibility for all costs and resulting profit or loss. Provides maximum incentive for the contractor to control costs, and imposes a minimum administrative burden on the customer.

Fixed-Price Incentive Fee (FPIF) - Uses an incentive whereby the contractor's profit is increased or decreased by a predetermined share of an overrun or under run. A firm target is established from which to later compute the overrun or under run. A ceiling price is set as the maximum amount the customer will pay. Necessary elements for this type of contract are:

- target cost - best estimate of expected cost;
- target profit - fair profit at target cost; share ratio(s) - to adjust profit after actual costs are documented; and,
- ceiling price - limit the amount the government will pay.

Fixed-Price Award Fee (FPAF) - Establishes a fixed price (including normal profit) for the effort. This price will be paid for satisfactory contract performance. An award fee can also be earned based upon a judgmental evaluation by the customer, sufficient to provide motivation for excellence in contract performance.

Fixed Price With Economic Price Adjustment (FPEPA) - A type of contract providing for upward or downward revision of the stated contract price upon the occurrence of a specified contingency. Adjustments may reflect increases/decreases in actual costs of labor or material, or in specific indices of labor or material costs.

2. Cost-Plus Family of Contracts

A type of contract which provides for payment to the contractor of allowable costs incurred in the performance of the contract, to the extent prescribed in the contract. This type of contract establishes an estimate of total cost for the purpose of obligation of funds and establishing a ceiling which the contract may not exceed (except at the contractor's own risk) without prior approval or subsequent ratification by the contracting officer.

Cost Plus Fixed-Fee (CPFF) - A cost reimbursement type contract which provides for the payment of a fixed fee to the contractor. The fixed fee once negotiated, does not vary with actual cost, but may be adjusted as a result of any subsequent changes in the scope of work or services to be performed under the contract.

Cost Plus Incentive-Fee (CPIF) - A cost reimbursement type contract with provision for a fee which is adjusted by formula in accordance with the relationship which total allowable costs bear to target costs. The provision for increase or decrease in

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the fee, depending upon allowable costs of contract performance, is designed as an incentive to the contractor to increase the efficiency of performance.

Cost Plus Award Fee (CPAF) – A cost reimbursement contract that provides for a fee consisting of (a) a base amount (which may be zero) fixed at inception of the contract and (b) an award amount, based upon a judgmental evaluation by the customer, sufficient to provide motivation for excellence in contract performance.

3. Other

Letter Contract – A letter contract is a written preliminary contractual instrument that authorizes the contractor to begin immediately manufacturing supplies or performing services. While a set price for contract performance has not been agreed to, the letter contract usually contains an overall contract price ceiling.

Time and Materials contracts (T&M) – A time and materials contract provides for acquiring supplies or services on the basis of (1) direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit and (2) materials at cost, including, if appropriate, material handling costs as part of material costs.

Basic Ordering Agreement (BOA) - An instrument executed between a customer and a contractor which sets forth negotiated contract clauses that will be applicable to future procurements entered into between the parties during the term of the agreement. It includes as specific a description as possible of the supplies or services and a description of the method for determining pricing, issuing, and delivery of future orders.

C. Standard Sections of a Contract

The following discussion lists the major clauses found in a Government contract. While the structure of commercial contracts can vary from Government contracts, the following basic structural requirements are found in both types of contracts.

Government contracts normally contain the following standard sections:

- Section B (Supplies or Services) – Contains the contract line item number (CLIN), Description of Supply or Service ordered, Quantity, Unit Price and Total Price.

Example: Section B				
CLIN/Item number	Supply/Service	Quantity	Unit Price	Total Price
0001	Radar	4	\$xxx	\$xxxx
0002	Feasibility Study (see special provision H-3)			

- Section C (Description or Specifications) – This section more fully describes the specifications and requirements of each line item which must be met in order to comply with the contract. Section may refer to the Statement of Work (“SOW”), which is a separate document incorporated into the contract by reference.

The SOW gives a complete description of performance required under the contract. It further describes work to be performed and establishes and defines

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all non-specification requirements for contractor's efforts either directly or with the use of specific cited documents.

Example: Section C

CLIN 0001 must meet Air Force specification xx-xx-xx
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- Section D (Packaging and Marking) – This section indicates how CLIN deliverable is to be packed and preserved and how the container is to be marked.
- Section E (Inspection and Acceptance) – Gives the Government's inspection and acceptance criteria for the ordered item. Once acceptance is made the contractor is entitled to payment or to keep ("liquidate") progress payments.
- Section F (Deliveries or Performance) – Gives date that CLIN item must be delivered or performed. Also gives shipping instructions.
- Section G (Contract Administrative Data) – Gives various administrative data such as the name and address of the contracting officer who will administer the contract and where to send invoices for payment.
- Section H (Special Provision) – This section contains various specific provisions that relate to the specific contract. This is an important section in that it contains clauses that further describe performance criteria, acceptance criteria and payment criteria.
- Section I (General Provisions) – Contains cites to specific FAR and DFARS. These regulations are incorporated into the contract by reference. Typical regulation subjects are payment clauses, default clauses and termination clauses.

Contract Work Breakdown Structure ("WBS") – The WBS is an organized method to break down a project (contract) into logical subdivisions or subprojects at lower and lower levels of detail. It is very useful in organizing a project. The WBS can assist the Aerospace examiner in evaluating whether various components of contract activity are qualified research. The WBS includes all the elements for the products (hardware, software, data, or services) which are the responsibility of the contractor. This comprehensive WBS forms the framework for the contractor's management control system.

III. Contracting Activities

A. Contracting Stages

1. Request for Proposal

Before there is a contract, there must be a need for the subject matter of the contract. In the realm of negotiated Government contracting, the need is conveyed by the Government to potential contractors in the form of a Request For Proposal ("RFP"). RFPs are used in negotiated acquisitions to communicate Government requirements to prospective contractors and solicit proposals. The RFP includes, in part, the Government's requirement; anticipated terms and conditions that will apply to the contract; information required to be in the offeror's proposal and significant factors that will be used to evaluate the proposal and their relevant importance.

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A Request for Quotation (“RFQ”) is sometimes used by the Government in negotiated acquisitions to communicate Government requirements to prospective contractors and to solicit a quotation. A response to an RFQ is only informational in nature and not a contractor’s offer. If applicable, the RFQ and contractors quotation are potential documents for an examiners analysis.

2. Bid & Proposal

In response to the RFP, the contractor is required to submit a description of the techniques that will be used to accomplish the Government’s requirement(s), along with a submission of related cost and pricing data. The contractor’s response is generally called the Bid & Proposal (“B&P”). Depending on the subject matter of the contract, the B&P can be quite extensive.

The RFP and B&P package can provide valuable insight for the Aerospace examiner in his effort to interpret the ultimate activities subsequently performed by the contractor pursuant to the resulting contract.

3. Awards / Authorization

a) Concept Exploration and Definition Phase

During this phase, program alternatives are identified based upon initial studies and analyses of design concepts, alternative acquisition strategies, expected operational capabilities, industrial base capacity, readiness, support, personnel requirements, and cost estimates. If the requirement is determined to be valid, authority is granted to proceed to the next phase.

b) Demonstration/Validation Phase (Dem/Val)

When competitive exploration of alternative system concepts is completed to the point where the selected alternatives warrant system demonstration, the next phase is the demonstration and validation effort. During this phase, prototype systems may be constructed to validate the proposed concepts. Department of Defense policy encourages granting competitive contracts to two or more industrial developers who are given latitude in design subject to service defined performance requirements. The demonstration and validation phase ends with a decision to proceed to the next phase, generally Full Scale Development (“FSD”).

c) Full Scale Development Phase (FSD)

When the demonstration and validation action has been completed, a recommendation is made for the preferred systems for FSD. This may include approval for long lead production items and limited production for operational test and evaluation. In this phase, an FSD prototype system is designed, developed and tested. A complete system is constructed, including tools and test equipment, training devices, and logistic support. At the conclusion of FSD a production decision is normally made.

d) Low-Rate Initial Production Phase (LRIP)

LRIP is the first effort of the Production and Deployment phase. The purpose of this effort is to establish an initial production base for the system, permit an orderly ramp-up sufficient to lead to a smooth transition to Full Rate Production, and to provide production representative articles for Initial Operational Test and Evaluation. This effort concludes with a Full Rate Production Decision Review to authorize Full Rate Production and Deployment.

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e) Full Production

Contracting for economic production quantities following stabilization of the system design and validation of the production process.

B. Development Activities

This section contains a brief discussion of aerospace development activities which may contain qualified research. The subject activities must be analyzed in conjunction with the requirements of IRC § 41(d) to determine if the activities are qualified research. The development activities must constitute elements of a process of experimentation relating to a new or improved function, performance, reliability or quality of a product or process.

1. Design Phase

The acquisition process begins with the identification and evaluation of a mission need by the customer. The design phase occurs from identification of mission need, through pre-contract research activity (company or Government sponsored research ["Independent Research & Development" ("IR&D")]) to full production. See Treas. Reg. § 1.41-4A(d)(4) which addresses IR&D.

a) Preliminary Design Review ("PDR")

PDR is a formal design review which is normally conducted during the early part of system development. It is conducted for each contracted for end item to evaluate early progress and technical adequacy of the selected design approach. PDR, which follows preliminary design efforts, allows the customer to observe the contractor's hardware and software design for the first time. During the review, the contractor generally discloses any changes to its originally proposed designs, along with the rationale for the changes. Generally, the design and engineering efforts leading up to and including PDR include QRE.

b) Critical Design Review ("CDR")

CDR is a formal design review which takes place after PDR. CDR is conducted for each contracted for end item before the design is approved for manufacturing. The review attempts to determine that the design will meet cost, schedule, and performance requirements. Risk assessments, produce-ability analyses, and integration compatibility analyses are all performed during CDR.

Essentially, the design is "frozen" following a successful CDR. Therefore, research credit claimed for the engineering effort following CDR should be closely scrutinized for non qualifying expenditures. It is the responsibility of Configuration Management to keep track of any changes to the design.

The "Master Program Schedule" ("MPS") for the contracted for end item should identify the PDR and CDR dates. Because the MPS is not part of the contract for the end item, the agent should request this document if it is not provided with the contract file. The absence of PDR and CDR is an indication that there was "no design effort" and generally no qualified research activity.

2. Development Testing

Development testing occurs throughout the design process leading up to and including CDR. Development testing is not "routine or ordinary testing or inspection

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for quality control” (i.e., testing procedures that are not QRE). Development testing is performed to prove the adequacy of the design. Qualified research expenditures for development testing may occur after CDR and prior to production, as long as the testing expenditures meet the requirements of IRC §41(d).

3. Certification

While certification costs are not normally encountered in the examination of Government Contracts, expenditures relating to Federal Aviation Administration (“FAA”) certification will be found in the area of commercial manufacture of airframes, engines and parts. As discussed below, FAA certification costs are generally not considered QRE. Any certification costs must meet the four part test of IRC § 41(d). Research credit claimed for certification costs should be closely scrutinized for non qualifying expenditures.

4. Preparation for Production

a) Production Readiness Review

Production Readiness Review (“PRR”) is used to assess a contractor’s readiness to transition from design to production. Some pre-production activities may occur prior to the PRR. The PRR is normally performed during FSD phase. “Preproduction planning for a business component” is deemed to occur after the beginning of commercial production and therefore, is not qualified research. *Treas. Reg. §1.41-4(c)(2)(ii)(A)*.

b) Tooling up

Tooling up refers to the process of acquiring or manufacturing sufficient production capable tooling (“rate tooling”) in preparation for production. Tooling up is a specifically excluded activity under *Treas. Reg. § 1.41-4(c)*, and thus is not qualified research.

c) Qualification Testing

Qualification Testing should be distinguished from “Routine or ordinary testing or inspections for quality control.” “Qualification testing is performed on initial items produced (engineering development units or prototypes), in order to determine if the item meets the design and performance specifications. Quality Assurance or Quality Control are tests performed after the commencement of commercial production, on selected production items, to determine if the production process is working properly. Qualification Testing is qualified research while Quality Control Testing is generally not qualified.

5. Deliverable Production Units per CLIN

The costs associated with the production of Deliverable Production Units per Contract Line Item Number (CLIN) are not allowed as qualified research.

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IV. Rules of Law

A. Research & Experimental Expenditures IRC § 174 Overview

An expenditure must be treated as an expense under IRC § 174 to be a qualified research expenditure. IRC § 41(d)(1)(A). Treas. Reg. § 1.174-2(a)(1) defines the term "research and 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. The term includes all such costs incident to the development or improvement of a product. The term includes the cost of obtaining a patent, such as attorneys fees expended in making and perfecting a patent application. Expenditures represent research and development costs in the experimental or laboratory sense if they are for activities intended to discover information that would eliminate uncertainty concerning the development or improvement of a product. Uncertainty exists if the information available to the taxpayer does not establish the capability or method for developing or improving the product or the appropriate design of the product. Whether expenditures qualify as research or experimental expenditures depend on the nature of the activity to which the expenditures relate, not the nature of the product or improvement being developed or the level of technological advancement the product or improvement represents.

Expenditures for the following are specifically excluded from the definition of research and experimental expenditures by Treas. Reg. § 1.174-2(a)(3):

- The ordinary testing or inspection of materials or products for quality control (quality control testing);
- Efficiency surveys;
- Management studies;
- Consumer surveys;
- Advertising or promotions;
- The acquisition of another's patent, model, production or process, or
- Research in connection with literary, historical, or similar projects.

Note that testing to determine if the design of a product is appropriate is not considered "quality control testing," and thus is not excluded from the definition of research and experimental expenditures by Treas. Reg. § 1.174-2(a)(3). Rather, quality control testing is testing or inspection to determine whether particular units of materials or products conform to specified parameters. Treas. Reg. § 1.174-2(a)(4).

Other rules regarding IRC § 174 expenses:

- The expenditures must be reasonable in amount under the circumstances. Treas. Reg. § 1.174 - 2(a)(6).
- Research and experimental expenditures include costs incident to the development or improvement of a product. The term "product" includes any pilot model, process, formula, invention, technique, patent, or similar property, and includes products to be used by the taxpayer in its trade or business as well as product to be held for sale, lease, or license. Treas. Reg. § 1.174-2(a)(2). However, research or experimental expenditures do not include expenditures

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for the acquisition of another's patent, model, production or process.
Treas. Reg. § 1.174-2(a)(3)(vi).

- Research and experimental expenditures can also include expenditures paid or incurred for research or experimentation carried on in the taxpayer's behalf by another person or organization. Treas. Reg. § 1.174-2(a)(8).
- However, expenditures for research or experimentation carried on in the taxpayer's behalf by another person are not eligible for IRC § 174 treatment, to the extent that they represent expenditures for the acquisition or improvement of land or depreciable property, used in connection with the research or experimentation, to which the taxpayer acquires rights of ownership. Treas. Reg. § 1.174-2(a)(8).
- Expenditures for the acquisition or improvement of land or for the acquisition or improvement of other property which is subject to allowances for depreciation or depletion are not research and experimental expenditures. Treas. Reg. § 1.174-2(b)(1). However, the annual allowances for depreciation or depletion may be considered research and experimental expenditures to the extent that the property to which the allowances relate is used in connection with research or experimentation. Treas. Reg. § 1.174-2(b)(1).
- Expenditures for research or experimentation which result, as an end product of the research or experimentation, in depreciable property to be used in the taxpayer's trade or business may, subject to the limitations of Treas. Reg. § 1.174-2(b)(4), are allowable as a current expense deduction under IRC § 174(a). Treas. Reg. § 1.174-2(b)(2).
- Expenditures for research and experimentation that are incurred in connection with the construction or manufacture of depreciable property by another are deductible under IRC § 174(a) only if made upon the taxpayer's order and at his risk. Treas. Reg. § 1.174-2(b)(3).
- However, no deduction is allowed if the taxpayer purchases another's product under a performance guarantee (whether express, implied, or imposed by local law) unless the guarantee is limited, to engineering specifications or otherwise, in such a way that economic utility is not taken into account. Treas. Reg. § 1.174-2(b)(3).
- Deductions for expenditures in connection with the acquisition or production of depreciable property to be used in the taxpayer's trade or business are limited to amounts expended for research or experimentation. Amounts expended for research or experimentation do not include the costs of the component materials of the depreciable property, the costs of labor or other elements involved in its construction and installation, or costs attributable to the acquisition or improvement of the property. Treas. Reg. § 1.174-2(b)(4)

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B. Qualified Research Expense & Activities Flowchart (IRC § 41(b) & (d))

EXCLUSIONS: I.R.C. § 41(d)(4)

Are ANY of the following activities present? If so, activity is not qualified research.

- Research After Commercial Production (I.R.C. § 41(d)(4)(A); Treas. Reg. § 1.41-4(c)(2)).
- Adaptation of Existing Business Component (I.R.C. § 41(d)(4)(B); Treas. Reg. § 1.41-4(c)(3)).
- Duplication of Existing Business Component (I.R.C. § 41(d)(4)(C); Treas. Reg. § 1.41-4(c)(4)).
- Surveys, Studies, Etc. (I.R.C. § 41(d)(4)(D); Treas. Reg. § 1.41-4(c)(5)).
- Internal Use Software (some exceptions apply) (I.R.C. § 41(d)(4)(E)).
- Foreign Research (I.R.C. § 41(d)(4)(F); Treas. Reg. § 1.41-4(c)(7)).
- Social Sciences, Etc. (I.R.C. § 41(d)(4)(G); Treas. Reg. § 1.41-4(c)(8)).
- Funded Research (I.R.C. § 41(d)(4)(H); Treas. Reg. § 1.41-4(c)(9)).

QUALIFIED RESEARCH: I.R.C. § 41(d)(1)

ALL criteria must apply. If not met at business component level, “shrink back” (Treas. Reg. § 1.41-4(b)(2))

- Expenditures may be treated as an expense under I.R.C. § 174 (I.R.C. §§ 41(d)(1)(A) and 174; see Treas. Reg. § 1.174-2)).
- Undertaken for the purpose of discovering information which is technological in nature, the application of which is intended to be useful in the development of a new/improved business component of the taxpayer (I.R.C. § 41(d)(1)(B)(1); Treas. Reg. § 1.41-4(a)(3) and (4)).
- Substantially all of the activities of which constitute a process of experimentation for a new or improved function, performance, reliability or quality (does NOT include activities related to style, taste, cosmetic, or seasonal design factors) (I.R.C. § 41(d)(1)(C) and (d)(3); Treas. Reg. § 1.41-4(a)(5)).

QUALIFIED RESEARCH EXPENSES: I.R.C. § 41(b)

Sum of amounts paid/incurred by a taxpayer in the credit year in carrying on the taxpayer’s trade/business:

- Wages paid/incurred for the performance of qualified services by an employee (I.R.C. § 41(b)(2)(A)(i)). Qualified services consist of engaging in qualified research, or engaging in the direct support of qualified services, or direct supervision of activities constituting qualified research (I.R.C. § 41(b)(2)(B), (D); Treas. Reg. § 1.41-2(d)).
- Supplies used in the conduct of qualified research (I.R.C. § 41(b)(2)(A)(ii)). Supplies are tangible property used in the conduct of qualified services, other than land/improvements to land, and property of a character subject to the allowance for depreciation (I.R.C. § 41(b)(2)(C); Treas. Reg. § 1.41-2(b)).
- Amount paid for the right to use computers in the conduct of qualified research (I.R.C. § 41(b)(2)(A)(iii)).
- Contract research expense (I.R.C. § 41(b)(1)(B)). Amounts paid or incurred by the taxpayer to any person (other than an employee of the taxpayer) for the performance of qualified research/qualified services (I.R.C. § 41(b)(3); Treas. Reg. § 1.41-2(e)).

Qualified Research Expenses, IRC § 41(b)(1) & (2) Quick References

- **QRE** = in-house research expense + contract research expense.
- **In-house research expense** = Wages + Supplies + Computer Usage.
- **Wages** = IRC § 3401(a) & IRC § 401(c)(1).
- **Supplies** = tangible property other than land, improvements to land and property of a character subject to the allowance for depreciation. Special consideration for utilities - generally considered G&A (not QREs), but it is possible that extraordinary expenditures for utilities may qualify.

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- **Qualified Services** means: engaging in qualified research, or the direct supervision or direct support of research activities which constitute qualified research.

Contract Research Expense, IRC § 41(b)(3) Quick References

- First review Treas. Reg. § 1.174 -2.
- Treas. Reg. § 1.41-2(a)(3) and Treas. Reg. § 1.41-4A(d)(2): Must retain substantial rights in research performed for others.
- Treas. Reg. § 1.41-2(e) Contract research expense requirements:
 - Expense paid or incurred in carrying on a trade or business to any person other an employee of taxpayer.
 - For qualified research or services which would qualify under IRC § 41(b)(2)(B).
 - Performance of qualified research only to the extent pursuant to an agreement entered into prior to performance.
 - Performed "on behalf of" taxpayer.
 - Taxpayer bears the expense even if research unsuccessful.
- If payment is contingent on success, the transaction may be considered paid for product or result, rather than performance of the research, and payment is not a contract research expense.
- "On behalf of" means taxpayer has right to the research result.
- Prepaid amounts must be deducted in year research is conducted.

Qualified Research, IRC § 41(d) Quick References

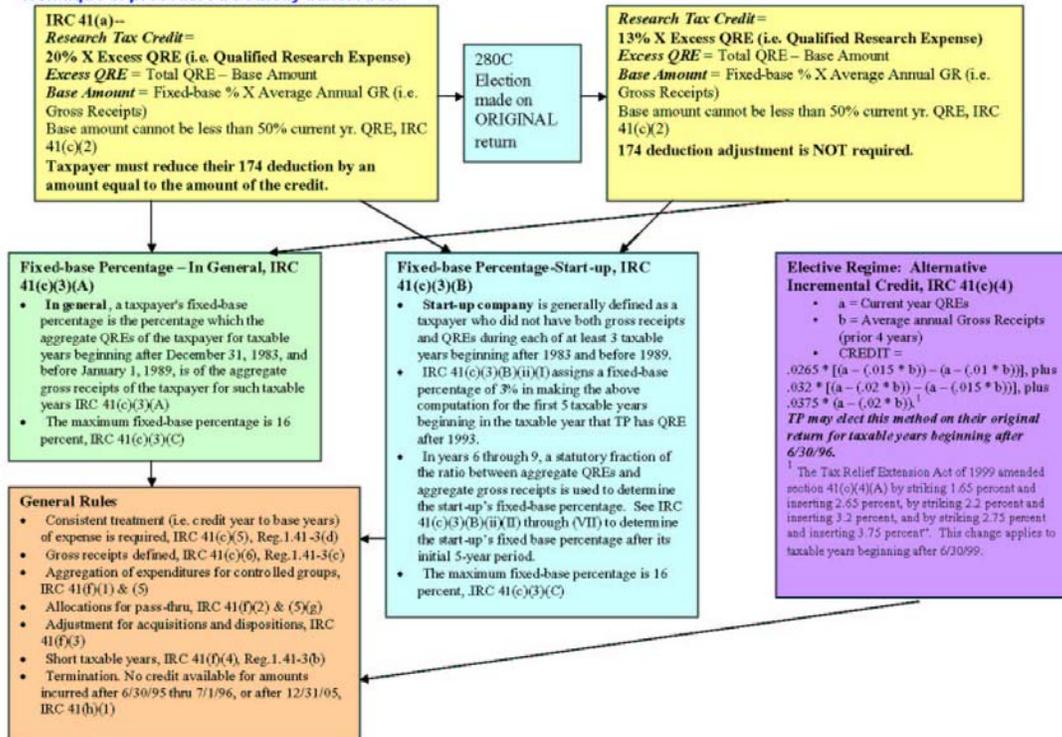
- Qualified research must meet all tests under IRC § 41(d)(1). If not, taxpayer must shrink back to the next level of the discrete business component.
- Patent safe-harbor is conclusive evidence of meeting the "discovery" test only.
- Substantially all (80% or more) of the activities must constitute elements of a process of experimentation. See Treas. Reg. § 1.41-4(a)(5) which discusses the elements of a process of experimentation.
- Tests are applied separately to each business component.
- Distinguish separate business components when assessing activities related to product vs. processes development.
- Qualified Purpose "... relates to a new or improved function, performance, or reliability or quality.... Not qualified...style, taste, cosmetic or seasonal design factors."
- Certain activities are always excluded activities under IRC § 41(d)(4).

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C. Computation Flowchart (IRC § 41(c) & (f))

"The material contained here provides general quick reference to IRC 41. It is not meant to imply that any specific audit technique or procedure be strictly adhered to."



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V. Issues Peculiar to the Aerospace Industry

A. Funded Research

Certain research activities are specifically excluded from the definition of qualified research by IRC § 41(d)(4). One of these excluded activities is funded research. Funded research is any research to the extent funded by any grant, contract, or otherwise by another person or governmental entity. IRC § 41(d)(4)(H). The rules of Treas. Reg. § 1.41-4A(d) govern the extent to which research is considered funded. Treas. Reg. § 1.41-4(c)(9).

1. Two-Part Test

The Two-Part Test of Treas. Reg. § 1.41-4A(d)(1) and (2):

Contingent on Success - The regulations provide that amounts payable under any agreement that are contingent on the success of the research, and thus paid for the product or result of the research, are not treated as funding. Treas. Reg. § 1.41-4A(d)(1).

Therefore, if the taxpayer performing the research is paid for its research, regardless of whether the research is successful, then the research is funded and is excluded from the definition of qualified research by IRC § 41(d)(4)(H). On the other hand, if the taxpayer performing the research is paid for its research only if it's successful, the research is not funded under this test.

Substantial Rights - If the taxpayer performing research for another retains no substantial rights in the research under the agreement providing for the research, the research is treated as fully funded, and no expenses paid or incurred by the taxpayer in performing the research are qualified research. Treas. Reg. § 1.41-4A(d)(2). If the agreement confers exclusive rights to exploit the research on someone other than the taxpayer, the taxpayer does not have substantial rights in the research and the research is treated as fully funded. A taxpayer does not retain substantial rights to the research if it must pay for the right to use the results of the research. Incidental benefits to the taxpayer from performance of the research, e.g., increased experience in a field of research, do not constitute substantial rights in the research.

Note that the two-part test of Treas. Reg. § 1.41-4A(d)(1) and (2) applies to the person performing the research and the person paying for the research. If the person performing the research does not retain substantial rights to the research and if the payments for the research is contingent on its success, then neither researcher nor the person paying for the research is entitled to treat any portion of the expenditures as qualified research. If the taxpayer performing the research retains substantial rights in the research under the agreement, the research is funded to the extent of the payments and the fair market value of any property to which the taxpayer becomes entitled by performing the research.

a) Contingent on Success Test (Fairchild Industries, Inc.)

The appellate court in Fairchild Industries, Inc. v. United States, 71 F.3d 868, (Fed. Cir. 1995), reversing, 30 Fed. Cl. 839 (1994) found that research conducted by Fairchild under a fixed-price contract with the U.S. Air Force was not funded because payment was contingent on success. The court found that Fairchild bore the risk of failure under the contract, in that the Air Force was liable for payment, on a line item-by-line item basis, only upon success of the research and its acceptance. At the time the contract was entered, it was not known whether the research would be successful or whether the Air Force would accept the research. The court also found that progress payments provided for under the contract did not commit the Air Force to accept

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unsuccessful performance, or to make partial payment if the product was not successfully produced.

b) Substantial Rights Test (Lockheed Martin Corp.)

In Lockheed Martin Corporation v. United States, 210 F.3d 1366 (Fed. Cir. 2000), the appellate court concluded that Lockheed retained substantial rights in the research performed by it under fixed-price contracts with the government even if it did not have the right to exclude others from using its research. The court found that the right to use the research, even if not exclusive, is a substantial right.

The Lockheed contracts also included a recoupment provision, which the Service argued required Lockheed to pay the government for the right to use the results of its research. The appellate court disagreed, finding that the recoupment provision did not restrict Lockheed's right to use the results of its research. Rather, the court found that the provision was a cost recovery mechanism, by which the government recovered some of the cost of its research and development. In contrast, the court determined that a provision requiring payment for the right to use research is generally a royalty, based on sales of the product. The appellate court reversed the lower court, finding that Lockheed had retained the right to use its research without paying for that right.

(1) Limited Rights

The appellate court in Lockheed determined that Lockheed had substantial rights to the research, based in part on the fact that the government contracts at issue allowed the taxpayer to enter into commercial contracts with third parties for the sale of items containing technology developed under the government contracts, and Lockheed could also enter into license or technical assistance agreements for the technology developed under the contracts. What if the taxpayer had the right to use its research, but only with respect to products subsequently produced in filling new orders by the same customers who had originally paid for the research. Does the taxpayer who performed the research have substantial rights in such research? Can a taxpayer have substantial rights to research if it cannot otherwise use such research in its business, or sell any products to third parties resulting from such research? This question is currently at issue in the Tax Court case *Rohr, Inc. v. Commissioner*, Docket No. 498-01.

2. Funded Research Considerations

The agent should determine whether the research performed by the taxpayer is funded whenever it is performed pursuant to a contract. Following are some considerations which may impact the agent's review:

a) Cost Reimbursement Contracts

The cost reimbursement family of contracts generally provides that the customer will reimburse the contractor for all or a portion of the allowable costs incurred by the contractor. For example, in the case of a costs-plus contract, the contractor is reimbursed for all allowable costs incurred, plus a profit as determined per contract. Accordingly, risk of failure of the research performed under a cost contract is borne by the customer, not the contractor, to the extent funded by the customer. Therefore, as a general

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rule, research under a cost contract is considered funded to the extent of the cost reimbursement.

b) Fixed-Price Contracts

A fixed-price contract is one where the price for performance is fixed by the contract at the inception of the contract. The price is not subject to adjustment solely by reason of the cost of performance. The contractor is obligated to perform and is at risk in the event of a cost overrun. The Fairchild case involved the question of whether research performed under a fixed-price contract was funded. The appellate court determined that Fairchild bore the risk of failure under the contract, in that the Air Force was liable for payment, on a line item-by-line item basis, only upon success of the research and its acceptance. Moreover, the court found that payment for the research was contingent on success even though Fairchild received progress payments during the life of the contract.

c) Contract Line Item Number Analysis

The examining agent should review the individual contract line item numbers (CLINs) to determine if the activities at the CLIN level qualify as research credit activities, and if so, whether the CLINs are separately funded. It is not unusual for some CLINs to be funded while other CLINs are not funded.

d) Progress Payments

Progress payments are made by the U.S. Government as the contractor's work progresses, typically based on the percentage of work completed or the attainment of a contract milestone or phase. A progress payment becomes "liquidated" upon acceptance and delivery of the property contracted for by the government. Prior to liquidation, the contractor is at risk and may be required to refund unliquidated progress payments if the contract is terminated for default or convenience of the government. Accordingly, such payments may be viewed as a form of non-taxable financing. Given that the progress payments were potentially refundable to the government, the appellate court in Fairchild determined that research related progress payments received by the taxpayer were not subject to the funded research exclusion. The taxpayer still had performance risk and if unsuccessful may have been required to refund the unliquidated progress payments to the government. Thus, the receipt of progress payment is not a barrier to the research credit if qualifying activities are performed.

e) Independent Research & Development Costs and Bid Costs

In general, any independent research and development costs and bid and proposal costs paid to a taxpayer by reason of a government contract shall not be treated as funding the underlying research activities except to the extent the independent research and development costs and bid and proposal costs are properly severable from the contract. Treas. Reg. § 1.41-4A(d)(4).

f) No Contracts

There are many instances where taxpayers undertake certain activities at a time when no contract exists. If research activities are performed, it would not be unusual for a taxpayer to claim research credit associated with these

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activities. There may be a funding question, however, if these costs become reimbursable contract costs upon contract award or pursuant to a Memorandum of Understanding (MOU). The examination agent should consider whether the MOU or the subsequent contract award results in funding of the expenditures incurred prior to contract award.

Treas. Reg. § 1.41-4A(d)(5) states that if at the time the taxpayer files its return for a taxable year it is impossible to determine to what extent particular research performed by the taxpayer during the year may be funded, then the taxpayer shall treat the research as completely funded for purposes of completing that return. When the amount of funding is finally determined, the taxpayer should amend the return and any interim returns to reflect the proper amount of funding.

(1) Pre-Contract Activities

Contractors sometime incur costs in anticipation of contract awards to comply with the proposed contract delivery schedule. For government contracting purposes, these pre-contract activity costs become allowable costs to the extent they would have been allowable if incurred after the date of the contract award. See FAR 31.205-32. Again, it would not be unusual for a taxpayer to claim the research credit with respect to those activities if research was performed. However, if these costs become reimbursable contract costs upon contract award, the agent should consider whether it was proper for the taxpayer to have claimed research credit associated with the pre-contract costs incurred. See Treas. Reg. § 1.41-4A(d)(5).

(2) Special Project Authorization Costs

“Special project authorization costs” is merely another name for pre-contract activity costs which are incurred with an informal understanding that a contract may be awarded at a future point in time perhaps when funding becomes available. Management may budget company funds to conduct certain activities to a point, pending contract award. Again, there may be a funding question and a timing issue if research activities were in fact incurred. See Treas. Reg. § 1.41-4A(d)(5).

g) Letter Contracts

A letter contract is a preliminary written contractual instrument that authorizes the immediate start of manufacture of supplies pending definitization of a fixed-price or cost reimbursement contract. A letter contract is usually awarded when work must begin immediately and timely negotiation of a definitive contract is not possible. A letter contract must include, among other things, a provision for definitization by a target date, a provision for unilateral determination of the contract price by the government if agreement to a definitive contract cannot be reached, and a limitation on government liability for costs incurred by the contractor prior to definitization. See FAR 16.603

The agent should consider whether the research authorized by the letter contract is an excluded activity, e.g., research after commercial production. Further, if the activities are qualifying, the agent should consider the impact of Treas. Reg. § 1.41-4A(d)(5), since generally a determination as

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to whether the contract is funded can be made only when the letter contract is finally definitized, which may not occur until a subsequent tax year.

h) Cost Sharing Contracts

A cost-sharing contract is a type of cost reimbursement contract in which the contractor receives no fee and is reimbursed only for an agreed-upon portion of its allowable costs. FAR 16.303(a). As discussed above, research by a contractor under a cost type contract is typically subject to the funded research exclusion because reimbursement of the contractor for research costs incurred is not contingent on whether its research is successful. Treas. Reg. § 1.41-4A(d)(1). However, in a cost share contract, the government only pays for a portion of the contract costs, and the contractor bears the cost of the unreimbursed portion. As such, the contingent on success test of Treas. Reg. § 1.41-4A(d)(1) has no application to the portion of the costs borne by the contractor and not reimbursed by the government. See Treas. Reg. § 1.41-4A(d)(3)(i) and (ii) on how to allocate funding between non-qualified and qualified research expenditures.

If the contractor has no substantial rights to the research performed under a cost share contract, then any otherwise qualified research expenses are likewise considered funded, by operation of the substantial rights test of Treas. Reg. § 1.41-4A(d)(2).

i) Level of Effort

Some contracts provide for payment based on the effort expended rather than results achieved. For example, the contract may provide that the taxpayer will be paid an hourly labor rate for its research. The contract provides that the taxpayer merely certifies hours expended in performing the requested effort. In such cases, the research is funded because payment is contingent only on the level of effort expended, and not on whether the research is successful.

B. Cascading Credit

The term "cascading research credit" is typically used by Service personnel to refer to situations where more than one taxpayer claims the research credit for the same item. This typically occurs when the prime contractor subcontracts work to another:

Example: A enters into a contract with the government for the design, development, manufacture and delivery of a developmental jet aircraft. A, as the prime contractor, subcontracts a subcomponent of the aircraft to B for a fixed price. A treats the amount paid for the subcomponent as an amount paid for supplies used in the conduct of qualified research, and claims the research credit on this amount. B engages in qualified research to design and develop the subcomponent, and likewise claims the research credit with respect to its development effort. The research credit with respect to the subcomponent is said to have "cascaded" from A to B.

There is nothing in IRC § 41 or the regulations hereunder specifically denying a prime contractor and subcontractor from both claiming the research credit with respect to the same item. Rather, whether the prime contractor and/or subcontractor

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may claim the credit will depend upon various provisions of the statute and the regulations and the particular facts of the case.

1. Prime Contractor Level

At the prime contractor level, cascading credits typically involve a supply or contract research item. In the example given above, the prime contractor treated the subcomponent as a supply expense. Alternatively, the expenditure could have been cast as a contract research expense.

a) Supplies

A taxpayer may claim the research credit for amounts paid or incurred for supplies used in the conduct of qualified research. IRC § 41(b)(2)(C). A supply includes any tangible property other than 1) land or improvements to land; and 2) property of a character subject to the allowance for depreciation. Supplies are used in the conduct of qualified research if they are used in the performance of qualified services by an employee of the taxpayer. The supply must be directly related to the performance of qualified services. Expenses for property used in general and administrative activities are not qualified research expenses. Treas. Reg. Sec. 1.41-2(b)(1).

The agent should verify the taxpayer's claimed supply expense to ensure that the amount only includes non depreciable tangible property acquired by the taxpayer that was used in the performance of qualified services by an employee of the taxpayer. There has been a trend to include a myriad of non-qualified costs in the research credit computation by claiming such costs are supplies. The examiner should carefully scrutinize prototype expenditures to determine whether the prototype is (or contains) property of a character subject to an allowance for depreciation. Additionally, taxpayers often incorrectly treat as a supply expense the general and administrative costs related to self constructed supplies.

b) Contract Research

Contract research expense is defined as 65% of any expense paid or incurred in carrying on a trade or business to any person, other than an employee of the taxpayer, for the performance on behalf of the taxpayer of qualified research, for services which, if performed by employees of the taxpayer, would constitute qualified services within the meaning of IRC § 41(b)(2)(B). Treas. Reg. § 1.41-2(e)(1). An expense is paid or incurred for the performance of qualified research only to the extent that it is paid or incurred pursuant to an agreement that—

- (i) is entered into prior to the performance of the qualified research;
- (ii) provides that research be performed on behalf of the taxpayer; and
- (iii) requires the taxpayer to bear the expense even if the research is not successful.

Treas. Reg. § 1.41-2(e)(2). Qualified research is performed on behalf of the taxpayer if the taxpayer has a right to the research results. Note, however, that qualified research can be performed on behalf of the taxpayer notwithstanding the fact that the taxpayer does not have exclusive rights to the results. Treas. Reg. § 1.41-2(e)(3). If an expense is paid or incurred pursuant to an agreement under which payment is contingent on the success of the research, then the expense is considered paid for the product or result rather than the performance

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of the research, and the payment is not a contract research expense. Treas. Reg. § 1.41-2(e)(2). If any contract research expense is attributable to qualified research to be conducted after the close of the taxable year, it shall be treated as paid or incurred when the qualified research is conducted. IRC § 41(b)(3)(B).

The agent should request a list of all contracts, along with the dollar amount of the claimed contract research expense. The contracts should be reviewed to determine whether the requirements of the contract research rules have been satisfied. Local Counsel can be helpful in interpreting the provisions of these agreements.

Often, cascading credit situations at the prime contractor level involve fixed-price contracts with milestone payments, one of which is for the delivery of an intangible design, and a subsequent payment for the delivery of the tangible embodiment of the design. Given that the prime contractor is paying for the subcontractor's research, the prime contractor is at best limited to claiming the intangible design as a contract research expense (not a supply expense). However, the prime may likewise be unable to claim the expense as contract research due to the funded research exclusion, if the milestone payment for the intangible design is contingent on success of the subcontractor's research. The tangible embodiment is the product of contract research undertaken on behalf of the prime by the subcontractor, and must be evaluated as such, i.e., it is not a supply expense. However, given that payment for the tangible embodiment was contingent on the success of the subcontractor's research, i.e., the intangible design, the cost of the tangible embodiment is excluded as funded research. This analysis is typical for cascading credit situations involving fixed-price contracts at the prime contractor level.

2. Subcontractor Level

At the subcontractor level, the chief consideration in the context of the cascading credit is typically whether the funded research exclusion of IRC § 41(d)(4)(H) applies. This requires a determination as to whether: 1) payment for the subcontractor's research was contingent on its success; and 2) the subcontractor retained substantial rights to its research. If the amounts payable to the subcontractor are contingent on the success of its research, then the payment is for the product or result of the research and the payment is not treated as funding. However, if the subcontractor is paid for its research, regardless of whether the research is successful, the research is funded. Treas. Reg. § 1.41-4A(d)(1). Under the substantial rights test, if the subcontractor retains no substantial rights in the research under the agreement providing for the research, the research is treated as fully funded, and no expenses paid or incurred by the taxpayer in performing the research are qualified research expenses. Treas. Reg. § 1.41-4A(d)(2).

C. Other Issue Analysis

1. After Commercial Production

Activities conducted after the beginning of commercial production of a business component are not qualified research. Activities are conducted after the beginning of commercial production of a business component if such activities are conducted after the component is developed to the point where it is ready for commercial sale or use, or meets the basic functional and economic

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requirements of the taxpayer for the component's sale or use. *IRC § 41(d)(4)(A); Treas. Reg. § 1.41-4(c)(2)(i).*

The following activities are “deemed” to occur after the commencement of commercial production and therefore do not constitute qualified research:

- (A) Preproduction planning for a finished business component;
- (B) Tooling-up for production;
- (C) Trial production runs;
- (D) Trouble shooting involving detecting faults in production equipment or processes;
- (E) Accumulating data relating to production processes; and
- (F) Debugging flaws in a business component.

Treas. Reg. § 1.41-4(c)(2)(ii)

In cases involving development of both a product and a manufacturing or other commercial production process for the product, the exclusion of activities commenced after the beginning of commercial production applies separately for: (1) the activities relating to the development of the product; and (2) the activities relating to the development of the process. *Treas. Reg. § 1.41-4(c)(2)(iii).*

For example, 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 the activities are conducted before the process meets the taxpayer's basic functional and economic requirements or is ready for commercial use. *Id.*

See Examples 1 and 2 of Treas. Reg. § 1.41-4(c)(10) which illustrate whether activities were incurred after commercial production.

a) Cut-off of Development Phase

The question of when research ends is closely tied to the research after commercial production exclusion under *IRC § 41(d)(4)(A)* and *Treas. Reg. § 1.41-4(c)*, discussed above. That is, the research phase of a project is generally concluded once the business component (i.e., the product or process) is developed to the point where it is ready for commercial sale or use, or meets the basic functional and economic requirements of the taxpayer for the component's sale or use. Any activities which occur after this point generally will not constitute qualified research.

In order to apply this cut-off point for when research ends, the examiner needs to determine when the product is developed to the point where it is ready for commercial sale or use by the taxpayer, or when the product meets the taxpayer's basic functional and economic requirements. The regulations do not define any of these terms, but, as shown above, they do give six examples of activities which are “deemed” to occur after commercial production, and thus excluded from credit eligibility.

Moreover, since the exclusion for research after commercial production provides two tests ((1) ready for commercial sale or use or (2) meets basic functional and economic requirements), the cut-off point for when research ends is the earlier of the two tests. For example, assume a widget manufacturer engages in

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research in developing a new kind of widget. The company then builds a model widget which is found to meet the taxpayer's basic needs. Once this occurs, the research has ended, despite the fact that no commercial production or use has yet occurred. On the other hand, if the company rushes their new widget to market and begins to commercially produce the item before ensuring that the design meets the taxpayer's basic functional and economic needs, then the research would be deemed to have ended upon the first production run (even if it was a trial production run).

b) When Commercial Production Begins

There is no general rule as to when a product is ready for commercial sale or use, or meets the taxpayer's basic functional and economic requirements. However, by focusing on the activities in a chronological order and applying the factors listed below, examiners should be able to determine whether the research phase of a project has ended:

- (1) When did the taxpayer resolve the uncertainties that existed at the outset of the project?
- (2) Is the taxpayer producing units of the product?
 - (a) How many?
 - (b) For what purpose?
- (3) Are the units being sold?
- (4) When was the first unit sold?
- (5) Are there contemporaneous documents where employees have signed off indicating that the product met the basic functionality as of a certain date?
- (6) When did the project go into the testing phase?
- (7) What type of testing was involved?
- (8) When was the first trial production run?
- (9) Is the activity excluded under any of the IRC § 41(d)(4) exclusions?
- (10) Does the activity at issue fall under one of the post-production excluded activities listed above?

c) Engineering Change Proposals (ECPs) Consideration

Assume in the widget example above that the company rushed the initial widget design to market and started selling units. As stated above, research would have ended upon that first production run even though the product may not have met the taxpayer's basic functional and economic requirements.

If, however, the taxpayer later decides to halt production and qualify for the research credit, without running afoul of the research after commercial production exclusion, the taxpayer's new activities must be considered to be activities to design a new or improved business component. This is because Congress intended that research geared toward the development of a new or improved business component should be eligible for the credit (if the other requirements are also met). See IRC § 41(d)(1)(B)(ii). Thus, if the redesigned widget is considered a new or improved business component of the taxpayer, then the examiner should treat those activities as a separate activity in determining: (1) whether the activities meet the tests for qualified research; and if so, (2) when research ends with respect to those activities.

In the aerospace industry, this issue often arises in the context of engineering change proposals (ECPs) occurring in a production contract. In general, an ECP is defined as a proposed engineering change and the documentation by which

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the change is described, justified, and submitted for approval or disapproval. *See 48 C.F.R. 1852.243-70.* Activities undertaken in furtherance of an ECP, like any other activities, must: (1) be individually evaluated to determine whether the activities meet the tests for qualified research; and if so, (2) when research ends with respect to those activities. In our experience, we have found that many activities undertaken in furtherance of an ECP:

- (1) Are not geared toward functional improvements to the business component;
- (2) Are conducted by the customer, not the contractor;
- (3) Do not involve the conduct of a process of experimentation; and/or
- (4) Are excluded under one or more of the exclusions under IRC § 41(d)(4).

Accordingly, ECPs should be carefully scrutinized. Where the number of ECPs is significant, the use of statistical sampling may be appropriate.

Even where a product meets the taxpayer's basic functional and economic requirements (and thus research has ended with respect to development of the product), the taxpayer may still be able to establish that the manufacturing process qualifies, if the requirements for qualified research are met with respect to the manufacturing process. In this case, the research after commercial production exclusion is to be applied separately with respect to the development of the product and the development of the manufacturing process.

However, if after production of the widget, the taxpayer merely engages in activities that fall under the research after commercial production exclusion, then the activities are excluded from credit eligibility. For example, if the taxpayer's post-production activities merely involved trouble shooting, data collection, or debugging of their original widget design or manufacturing process, then these activities are excluded.

2. Adaptation / Duplication (e.g. Reverse Engineering)

Activities relating to adapting an existing business component to a particular customer's requirement or need are not qualified research. *Treas. Reg. § 1.41-4(c)(3)*. This exclusion does not apply merely because a business component is intended for a specific customer.

Adaptation involves making changes to an existing business component that do not improve the function, performance, reliability, or quality of that existing business component.

Applying the "shrinking-back rule," pursuant to *Treas. Reg. § 1.41-4(b)(2)*, will assist the examiner in determining whether the taxpayer's efforts are merely adaptation. The requirements of section 41(d) are to be applied first at the level of the discrete business component (i.e. the product) to be held for sale. If these requirements are not met at that level, then they apply at the most significant subset of elements of the product. This shrinking back of the product is to continue until either a subset of elements of the product that satisfies the requirements is reached, or the most basic element of the product is reached and such element fails to satisfy the test. This shrinking-back rule is applied only if a taxpayer does not satisfy the requirements of IRC § 41(d)(1) with respect to the overall business component. The shrinking-back rule is not itself applied as a reason to exclude research activities from credit eligibility.

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Activities relating to reproducing 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 about the business component are not qualified research. *Treas. Reg. §1.41-4(c)(4)*. This exclusion does not apply merely because the taxpayer examines an existing business component in the course of developing its own business component.

Reverse Engineering (the taking apart of something to determine how it is built) is not a qualifying research activity.

a) Version – Foreign Customers

In certain instances U.S. military hardware sold to foreign countries do not contain various critical technologies that are contained on the military hardware sold to the U.S. armed services. Critical technology can be found on the Militarily Critical Technologies List (“MCTL”). The MCTL is a detailed collection of information on technologies which the Department of Defense assesses as critical to maintaining superior U.S. military capabilities.

The cost of modifying military hardware to facilitate foreign sales is generally considered an adaptation activity that is not qualified research.

In addition to the above exclusions, Section 41(d)(4) excludes activities such as efficiency or management surveys, market research, routine data collection or routine or ordinary testing, or inspection for quality control. Also excluded are activities relating to style, taste, cosmetic or seasonal design factors.

3. Business Component

An activity must be intended to be useful in the development of a new or improved “business component” of the taxpayer to be considered qualified research. *IRC § 41(d)(1)(B)(ii)*. The term “business component” means any product, process, computer software, technique, formula, or invention which is to be:

(i) held for sale, lease, or license, or

(ii) used by the taxpayer in a trade or business of the taxpayer,

IRC § 41(d)(2)(B).

a) Product vs. Process Distinction

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). *IRC § 41(d)(2)(C)*.

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 the activities are conducted before the process meets the taxpayer's basic functional and economic requirements or is ready for commercial use. *Treas. Reg. § 1.41-4(c)(2)(iii)*.

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b) Second Source

Second Sourcing is when the U.S. Government requests that one contractor provide all of the specifications and blueprints for a product to another contractor so that the Government has multiple sources for an identical item. Because developmental research relating to a product is generally performed prior to the technology transfer to the second source taxpayer, activities relating to second sourcing are generally not considered qualified research.

(1) Designing the Manufacturing Facilities

If a second source activity is to be considered qualified research, the activity must meet the requirements of IRC § 41(d)(1) and not be an excluded activity listed under IRC § 41(d)(4). The examiner must analyze costs to insure that claimed expenditures do not relate to the creation of property of a character subject to the allowance for depreciation (a non-qualifying activity). *IRC § 41(b)(2)(C)*.

(2) Designing the Manufacturing Process

The examiner must undertake the same analysis for designing the second source manufacturing process as discussed above for designing second source manufacturing facilities.

4. IRC § 174 Consideration

a) Asset of a Character Subject to Allowance for Depreciation

Issues can arise in connection with prototypes or components thereof which are subject to an allowance for depreciation. To be a qualified research expenditure, the expenditure must be treated as an expense under section 174. *IRC § 41(d)(1)(A)*. However, IRC § 174 excludes from its application any expenditure for the acquisition or improvement of depreciable property to be used in connection with the research or experimentation. *IRC § 174(c); Treas. Reg. § 1.174-2(b)(1)*. Amounts expended for research and experimentation do not include the costs of the component materials of the depreciable property, the costs of labor or other elements involved in its construction and installation. *Treas. Reg. § 1.174-2(b)(4)*. To the extent a prototype is depreciable, and thus excluded from the definition of an expense for IRC § 174 purposes, it is likewise excluded from the definition of a qualified research expense.

b) Forthcoming Guidance

There is pending guidance on the treatment of the component material and labor costs attributable to inventory property under IRC § 174. It is on the 2005 priority guidance plan.

5. Multiple Prototypes

In the Aerospace Industry it is not unusual for the taxpayer to claim multiple prototypes as qualifying items for purposes of both sections 41 and 174.

A prototype is an original model constructed to include all the technical characteristics and performances of a potential new product. For example, if a state

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of the art military jet aircraft is being designed for a customer, several prototypes may be needed to perform specific tests, each prototype being used to perform its own unique tests. The design and testing of the prototypes may be considered qualified research, while the construction of the prototypes may be considered the acquisition of depreciable property. A question also arises whether the mere duplication of the original prototype is considered qualified research pursuant to IRC § 41(d).

In many cases one or more of the prototypes are pre-sold while the item undergoes further testing. Thus, the obvious question the examiner is confronted with is whether one or more of the so called prototypes actually qualifies as either an expense item pursuant to IRC § 174 or as QRE for the credit under section 41. In general, items pre-sold represent property of a character which is subject to depreciation. The nature of the property and not the particular usage by the taxpayer is determinative under IRC § 174. Accordingly, property of a character which is subject to the allowance for depreciation is not eligible for a current deduction. *IRC § 174(c); Treas. Reg. § 1.174-2(b)(1)*. Cost which cannot be deducted pursuant to IRC § 174 are not QRE. *IRC § 41(d)(1)(A)*.

6. Mock-ups and Models

The terms prototype, mock-ups and models are often used interchangeably to mean any full scale pre-production representation of a design, whether operational or not. The terms mock-up or models are sometimes used to describe a non-operational representation and the term prototype to describe an operational item. The same depreciable property limitations for allowance of the research credit that apply to prototypes also apply to mock-ups and models.

7. Special Tooling & Special Test Equipment

Special Tooling generally means jigs, dies, fixtures, molds, patterns, taps, gauges, other equipment and manufacturing aids, all components of these items, and replacement of these items, which are of such a specialized nature that without substantial modification or alteration their use is limited to the development or production of particular supplies or parts thereof or to the performance of particular services. *FAR §45.101*.

Special Test Equipment means either single or multipurpose integrated test units engineered, designed, fabricated, or modified to accomplish special purpose testing in performing a contract. *FAR §45.101*.

It should be noted that Special Tooling & Special Test Equipment in many instances are: (1) Government Furnished Property (title rests with the Government); or (2) property developed for the Government (which title may later rest with the Government). Title to Special Tooling under cost-reimbursement contracts is acquired by the Government in all cases. *FAR §45.306-2*. See *FAR §45.307-2* for rules relating to Special Test Equipment which will either be acquired or fabricated by the contractor.

The examiner must determine whether expenditures for Special Tooling & Special Test Equipment are qualified research expenditures and whether the items produced or acquired are property of a character which is subject to the allowance for depreciation not eligible for the credit.

If the taxpayer is required to acquire or produce Special Tooling or Special Test Equipment pursuant to a cost reimbursement contract, the costs of acquisition or

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production are considered “funded” expenditures not eligible for the research credit. *IRC § 41(d)(4)(H)*.

8. Tooling-up

Tooling-up for production is generally considered a production process and not qualified research. However, if the tooling-up process results in further research and development work, such as the development of new and improved production machinery or a new or improved production process, the tooling up activity may include some qualified research. Mere trouble shooting a known production process is not considered qualified research.

9. Testing

a) To Destruction

In many instances prototypes or models are tested to destruction. An example would be a newly designed prototype missile created to test the accuracy of the missile’s new guidance system. The test prototype missile is fired at a test target and, as intended, the missile is destroyed on impact. Because the prototype was produced to be consumed in the research process, it is not considered property of a character subject to the allowance for depreciation.

b) Design vs. Quality Testing

A distinction is required to be made between testing that results in a new or improved design versus testing for mere quality control. In order to be qualified research, testing must be conducted for a *new* or *improved* function, performance or reliability or quality. *IRC § 41(d)(3)(A)*. Qualified research does not include routine or ordinary testing or inspection for quality control. *IRC § 41(d)(4)(D)(v)*; *Treas. Reg. § 1.41-4(c)(5)(v)*.

Test firing a missile in order to develop the design for a new missile guidance system would be considered testing for a purpose that may qualify for the research credit. Test firing 3 missiles, out of a limited production run of 100 missiles, to insure that the missiles were being produced to the specified parameters of a design could be considered quality control testing and not considered qualified research.

c) Baseline Testing

In situations involving multiple prototypes, *most but not all* are tested to destruction. The obvious question is which, if any, of the prototypes qualify for research credit?

To extend the missile example, let's say that the taxpayer manufactures ten "prototype" missiles under the contract. Five of these missiles are intended to be fired in tests representing various potential battlefield conditions (i.e. daylight, night, smoke) to test the accuracy of the missile's guidance system. One is to be retained by the taxpayer in the taxpayer's research laboratories as a "baseline" for further development and improvement of the basic design. One is to be transferred to the military to be retained by the military's program office as a "baseline". The final three are to be delivered to the military where they will be used to train the crews servicing the missile in how to properly handle and store the weapon.

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Since the first five missiles are consumed in a process of experimentation, testing simulating battle conditions, they qualify as QRE. The sixth missile retained by the TP as “baseline” for further development or for improvement to the basic design would not qualify as supply QRE. However, if the TP incurs additional cost with respect to further development or for improvements to the basic design etc., then those costs probably would qualify as additional QRE. The seventh through tenth missiles transferred to the military either as "baseline" or for training purposes are merely commercial production deliveries of the missiles which are of a character subject to the allowance for depreciation.

D. IRC § 41(d) – Qualified Research

1. Bid & Proposal Cost

Bid & Proposal (“B&P”) is a part of the government contracting process and can also be applicable to commercial contracts. The B&P portion of the contracting process has a normal duration of 1-3 months. A majority of the costs found during this period are not qualified research. Costs that are found in this portion of the contracting process are usually related to the preparation and development of the taxpayer’s Best and Final Offer (“BAFO”). Examples of non-qualifying costs are: proposal management costs, proposal writing, management review, marketing costs, travel cost to meet with Government officials, development of storyboards and art for presentations, and other cost associated with development of the taxpayer’s BAFO.

2. Program Management

Treas. Reg. § 1.41-4(c)(5)(ii) states that qualified research does not include activities relating to management functions or techniques, including such items as preparation of financial data and analysis, development of employee training programs and management organization plans, and management-based changes in production processes (such as rearranging work stations on an assembly line).

3. Safety

Safety programs are generally evaluative in nature and therefore are considered surveys and studies specifically excluded as qualifying research. IRC § 41(d)(4)(D). This should be contrasted with designing safety into a new or improved product which might be considered a qualified research activity depending on whether the activity meets the requirements of IRC § 41(d).

4. Training

Costs associated with training customers in the use of a new or improved product do not qualify for the research credit. Examiners should review the contract for training program specifications, which may include such non-qualifying activities as: (1) the development and preparation of training courses, materials and manuals; (2) the development and fabrication of training equipment; and (3) provisions for training services and facilities.

5. Technical Writing

Engineers can spend a substantial amount of non-qualifying time writing and documenting information to be incorporated in either a service manual or owners manual. While these costs may not be contained in the taxpayer’s normal accounting systems, the expenditures generally can be found in taxpayer’s cost management system. Examiners should review the chart of accounts for both the taxpayer’s normal accounting

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systems and any auxiliary accounting systems (such as a cost managerial system) for any codes that would relate to technical writing.

6. Research Outside the United States

Research performed in foreign countries is not allowable except for costs incurred after June 30, 1999 in the commonwealth of Puerto Rico and any possession of the United States. *Treas. Reg. 1.41-4(c)(7)(i)*.

As research costs have soared, taxpayers have been partnering with foreign companies to share in the research cost burden. Examiners should review the necessary contracts/documents to verify that the foreign research components are not included in the taxpayer's research credit calculations. When this issue is found during the course of an audit, taxpayers may assert the argument that while the research is performed overseas, the data is analyzed in the United State. This argument is not supported in either the Code or Treasury Regulations.

Another trend is the hiring of technical employees, such as engineers and software programmers, in third world countries. The taxpayer may make the same argument as stated above "that the data is being analyzed in the United States." Again, the costs of foreign employees performing research in a foreign country are not eligible for the research credit.

7. FAA Certification Costs

The United States Government requires FAA certification in order for "commercial" airplanes to fly in United States airspace. FAA certification is not required for military aircraft and for aircraft that will never transit United States airspace.

The concept of "research and development" should not be confused with FAA certification testing. By entering into the FAA certification process, the manufacture is basically stating that very little uncertainty exists and we are ready to undergo the Government's stringent criteria/regime of testing to prove that there is no uncertainty.

FAA certification testing can vary depending on whether the test is for a new design concept, the test is for new materials or new regulatory requirements have emerged. FAA certification testing generally represents quality control/verification testing, not research and development. These "tests" are normally demonstrations of a fully designed product, or component. The demonstration "tests" are done to prove and substantiate that the design meets certain government standards and criteria. The tests are usually not performed as part of the design process.

FAA aircraft certification is governed by 14 C.F.R., Chapter 1, Part 21. Part 21.33 provides for inspection and testing with respect to certification. Part 21.33 provides that the product and manufacturing process conform to the specifications in the type design. Thus, when FAA certification testing takes place the taxpayer has determined that the product (i.e. aircraft or part) meets its functional and economic requirements and is making that representation to the FAA. *See IRC § 41(d)(4)(A); Treas. Reg. § 1.41-4(c)(2)(i)*.

E. IRC § 41(b) Expense Items

Section 41(b)(1) of the Code defines qualified research expenses (QREs) as the sum of the amounts paid or incurred for in-house research expenses and contract research expenses. Contract research expenses are defined as 65 percent of any amount paid by the taxpayer to

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any person (other than an employee of the taxpayer) for qualified research. IRC §41(b)(3)(A).

In-house research expenses include: 1) any wages paid to an employee for qualified services performed by such employee; 2) any amounts paid for supplies used in the conduct of qualified research; and 3) amounts paid to another for the right to use computers in the conduct of qualified research. IRC § 41(b)(2)(A). Qualified services include: i) engaging in qualified research; or ii) engaging in the direct supervision or direct support of research activities which constitute qualified research. IRC § 41(b)(2)(B). Supplies are defined as any tangible property other than: i) land or improvements to land; and ii) property of a character subject to the allowance for depreciation. IRC § 41(b)(2)(C).

1. Wages-Direct Supervision

The term “direct supervision” as used in IRC § 41(b)(2)(B)(ii) means the immediate supervision (first-line management) of qualified research (as in the case of a research scientist who directly supervises laboratory experiments, but who may not actually perform experiments). Direct supervision does not include supervision by a higher-level manager to whom first-line managers report, even if that manager is a qualified research scientist. Treas. Reg. § 1.41-2(c)(2).

Examiners should review position descriptions or evaluations of managers whose wages are included in the credit computation. However, one has to look beyond the title or the job description to see what activities an individual actually performs. Taxpayers often claim that theirs is a "flat organization," whereby titles are not that important, e.g., the president of the company allegedly performs hands-on research working side-by-side with the employees. In some cases, higher level managers (above first line managers) may be directly involved in qualified research due to their technical background, but their qualified research activities only constitute a small portion of their overall work responsibilities. Conversely, there may be individuals working in a traditional research department who are not engaged in qualified activities.

2. Wages-Direct Support

The term “direct support” as used in IRC § 41(b)(2)(B)(ii) means services in the direct support of either: i) persons engaged in the actual conduct of qualified research; or ii) persons who directly supervise persons engaged in the actual conduct of qualified research. Treas. Reg. § 1.41-2(c)(3).

The "direct support" argument is frequently encountered with respect to wages paid to patent attorneys, claiming that patent attorneys directly support the research effort through their efforts. While the activities of patent attorneys are generally indirectly beneficial to the research effort, their activities generally do not have any impact upon whether the research can, in fact, be completed. Accordingly, patent attorney activities most often do not constitute direct support.

3. Wages- Employee Benefits

The term “wages” has the meaning given such term by IRC § 3401(a) for income tax withholding purposes. IRC § 41(b)(2)(D)(i). Therefore, amounts that are not subject to withholding, such as certain fringe benefits, are not included in the research credit computation even though paid to an employee performing research services. See IRC § 3401(a) for other amounts not subject to withholding.

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4. Wages-G&A, Marketing & Sales, Information Technology

Once again the examiner should review the activities performed by the individuals for whom the wages are being claimed. Direct support of research does not include general and administrative services, or other services only indirectly of benefit to research activities. This is the case whether the general and administrative personnel are part of the research department or are in a separate department. Treas. Reg. § 1.41-2(c)(3)(ii).

5. Supplies-Overhead

A supply expense must be directly related to the performance of qualified services to be a QRE. Expenses for property used in general and administrative activities or otherwise only indirectly related to the research, are not QREs. Treas. Reg. § 1.41-2(b)(1).

6. Supplies-Tooling

Whether a supply expense is a QRE depends upon its relationship to the research credit effort. The credit is not available if such expenditure constitutes an indirect research expenditure, or if such expenditure is part of general and administrative costs or overhead costs or subject to allowance for depreciation. On the other hand, supplies used by a machinist in the machining of a part of an experimental model, may constitute QREs.

7. Supplies-Extraordinary Utilities

Treas. Reg. § 1.41-2(b)(2) provides that, in general, amounts paid for utilities such as water, electricity, and natural gas used in the building in which qualified research is performed are treated as expenditures for general and administrative expenses, and therefore do not constitute QREs. However, to the extent the taxpayer can establish that the special character of the qualified research required additional extraordinary expenditures for utilities, the additional expenditures shall be treated as amounts paid or incurred for supplies used in the conduct of qualified research. For example, to the extent that the taxpayer can establish that the special character of the research somehow required an extraordinary additional expenditure for electricity, such as for the operation of high energy consuming equipment in laser or nuclear research, such expenditures may be treated as supplies used in the conduct of qualified research

8. Contract Services – Independent Contractors

Contract research expenses are limited to 65 percent of any amount paid by the taxpayer to another person (other than an employee of the taxpayer) for qualified research. IRC § 41(b)(3)(A). The reduced allowance for contract research is intended to account for the overhead items and profit built into the contract payment.

9. Self-Constructed Supplies

a) Supply vs. Asset

Is the supply item used in the research activity or does it become the product of the research? In some instances the claim is made that all costs going into the development of an end product constitute allowable supply expenses, because until it is completed, it is unknown whether the product will be successful.

Supplies are used in the conduct of qualified research only if they are used in the performance of qualified services, as defined in IRC § 41(b)(2)(B). Supplies indirectly related to the research or for general and administrative purposes do not qualify. Treas. Reg. § 1.41-2(b)(1).

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b) Consumed vs. Depreciable

A recurring issue is whether the item in question is of a character subject to the allowance for depreciation. If so, then it is not a supply for purposes of IRC § 41(b)(2)(C)(ii). Do items used in the research process that would normally be excluded as depreciable, but which are consumed in less than one-year in the research process, constitute qualified supplies? The argument advanced by taxpayers here is that due to their short lives, the items are not depreciable in the taxpayer's hands.

VI. Computational Aspects

A. Computational Regimes

The research credit as computed under IRC § 41(a)(1) is equal to the sum of: 1) 20 percent of the excess (if any) of the taxpayer's QREs for the taxable year over the base amount and 2) 20% of the basic research payments determined under IRC § 41(e)(1)(A). For tax years beginning after December 31, 1989, the base amount is equal to the product of the taxpayer's fixed-base percentage multiplied by the taxpayer's average annual gross receipts for the preceding four years¹. IRC § 41(c)(1). However, in no event is the base amount to be less than 50 percent of the QREs for the year of the credit. IRC § 41(c)(2). In general, the fixed-base percentage is equal to the aggregate QREs of the taxpayer for taxable years beginning after December 31, 1983, and before January 1, 1989, divided by the aggregate gross receipts of the taxpayer for such taxable years. IRC § 41(c)(3)(A). The base amount establishes the research intensity of a taxpayer's research effort during specific base years, which is then compared to the current year's level of research, i.e., the current year's QREs. Taxpayers are entitled to a research credit whenever their rate or level of research activity increases relative to prior levels of research activity, thus reflecting the incremental nature of the credit.

Alternatively, for taxable years beginning after June 30, 1996, taxpayers may elect to compute their research credit under the regime provided under IRC § 41(c)(4). The alternative credit is equal to the sum of:²

1. 2.65 percent of so much of the QREs for the taxable year as exceeds 1 percent of the taxpayer's average annual gross receipts for the preceding four years. However, this amount cannot exceed 1.5 percent of taxpayer's average annual gross receipts for the four preceding taxable years.
2. 3.2 percent of so much of the QREs for the taxable year such as exceeds 1.5 percent of taxpayer's average annual gross receipts for the preceding four years. However, this amount cannot exceed 2 percent of taxpayer's average annual gross receipts for the four preceding taxable years.
3. 3.75 percent of so much of the taxpayer's QREs as exceeds 2 percent of such taxpayer's average annual gross receipts for the four preceding taxable years.

¹ For taxable years beginning before 1990, the above rules do not apply. Instead, for such years the research credit was equal to 20 percent of the excess of qualified research expenses for the determination year over "base period research expenses" plus 20% of the basic research expenses as determined under IRC § 41(e)(1)(A). "Base period research expenses" were the average qualified research expense paid or incurred for each year in the base period. In general, the base period was the three taxable years immediately before the "determination year." Contact a Research Credit Technical Advisor for assistance with pre-1990 computational issues.

² The Tax Relief Extension Act of 1999 amended IRC § 41(c)(4)(A) by striking 1.65 percent and inserting 2.65 percent, by striking 2.2 percent and inserting 3.2 percent, and by striking 2.75 percent and inserting 3.75 percent". This change applies to taxable years beginning after June 30, 1999.

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The advantage of this regime is that it does not require substantiation of the fixed base years' research activity. As such, it may be a preferable method for a taxpayer that does not increase its level of research activity from year-to-year. Once elected, however, this method applies to all subsequent years of the taxpayer, and can be revoked only with the consent of the Commissioner. IRC § 41(c)(4)(B).

B. Base Year Records

Examiners should review the QREs for the base years for taxpayers which compute their research credit under IRC § 41(c)(1). The examiner's work papers and/or audit report should provide an explanation of the taxpayer's base year computational method, a description of the records available, and a copy of the taxpayer's summary work papers supporting the base year amount.

Examiners should also watch for research credit refund claims which increase research expenses in the earliest year for which the statute of limitations is open for refund purposes, but do not adjust the QREs in base period years for which the statute of limitations is closed. This is contrary to the underlying intent of the research credit as computed under IRC § 41(a)(1), which seeks to reward taxpayers which increase their level of spending on research. On the other hand, some taxpayers are continuously adjusting their fixed-base percentages, even when their method of determining QREs has not changed from year-to-year.

In cases where the examiner decides to conduct a comprehensive examination of the base period years, the examiner should make sure that the same type of expenditures reflected in the claim year are also reflected in the base years. The purpose of the base period inquiry is to verify that the taxpayer has determined the research expenses in the base period on a basis consistent with the determination of research expenses for the credit year and to ascertain the reasons for any increases in a taxpayer's research expenses.

In Research Inc. v. United States, 95-2 U.S.T.C. ¶ 50,407 (DC Minn.), the Government contended that the taxpayer was not entitled to the research credit because it was unable to accurately document its base year QREs. The Government argued that where the taxpayer cannot substantiate the base period amounts, it cannot qualify for the credit because there is no indication of the amount of increase involved. The Court ruled in favor of the Government, holding that the taxpayer must be able to prove the correct amount of its base period QREs to qualify for the credit. The Court quoted Justice Holmes' observation that "Men must turn square corners when they deal with the Government." The Court found this case to be one in which the corners were plainly required to be squared and all the formalities complied with.

C. Base Amount Issues

1. Gross Receipts

The computation of the research credit under IRC § 41(a)(1) was revised by the Revenue Reconciliation Act of 1989 to incorporate a taxpayer's gross receipts. However, neither the statute nor the legislative history defined the term gross receipts, other than to provide that gross receipts for any taxable year are reduced by returns and allowances made during the tax year, and, in the case of a foreign corporation, only gross receipts effectively connected with the conduct of a trade or business within the United States are taken into account. IRC § 41(c)(6). The Service issued proposed regulations in 1998 defining the term gross receipts. The proposed regulations were later replaced by final Treas. Reg. § 1.41-3(c)(1), which was made applicable to taxable years beginning on or

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after January 3, 2001. The final regulation retained the broad definition of the term in the proposed regulations, providing that 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 (e.g. revenues derived from the sale of inventory before reduction of cost of goods sold). Treas. Reg. § 1.41-3(c)(1). Examiners should verify that the taxpayer is not reducing gross receipts by cost of goods sold in computing the base amount. Note that certain amounts are excluded from the definition of gross receipts by Treas. Reg. § 1.41-3(c)(2).

2. Consistency Rule

Notwithstanding whether the period for filing a claim for credit or refund has expired, taxpayers must determine the QREs for the base years in a manner which is consistent with the method used for current taxable year, for purposes of computing the fixed base percentage. IRC § 41(c)(5). Similarly, it is important that gross receipts be computed in a consistent manner for purposes of computing the base amount - for both the fixed base percentage and the "four prior years" components of the base amount. Distortions may arise when the taxpayer's method of calculating either QREs or gross receipts change from year-to-year. Taxpayers should fully explain their method of determining QREs and gross receipts. Summary work papers should be secured and traced to books and records. Taxpayers should be made aware that base year records must be maintained for all years that the research credit is claimed.

3. Aggregation

All members of a controlled group or group of trades or businesses are treated as a single taxpayer. If a taxpayer is part of a "controlled group" of corporations, the research credit is computed based on aggregation of QREs and gross receipts by all members of the controlled group. IRC § 41(f)(1). This is also referred to as the "single taxpayer rule." A controlled group is a group of trades or businesses under common control, control being defined as owning more than 50% of the voting power or value of the stock of the entity. Because control is determined based on more than 50% percent ownership, a controlled group is potentially broader than a consolidated group, and may include brother – sister related corporations. Also, control applies to any "trade or business" owned by a taxpayer. Once the "single taxpayer" credit is determined, it is then allocated among the members of the group. IRC § 41(f)(1)(B)(ii). Examiners should verify the status of a taxpayer's business structure and confirm that all appropriate members are included in the aggregate credit computation.

4. Acquisitions / Dispositions

Certain adjustments to qualified research expense and gross receipts are required when a taxpayer acquires or disposes of a major portion of a trade or business of another person. See IRC § 41(f)(3). The base amount is affected by increases or decreases in QREs or gross receipts related to the acquisition or disposition. The taxpayer should clearly document activities related to acquisitions and disposition, and the examiner should secure copies of the taxpayer's summary work papers for review and verification of compliance.

D. Claims

The Service is authorized to credit, within the applicable period of limitations, an overpayment against any liability in respect of an internal revenue tax of the person who made the overpayment, and must refund any balance to that person. IRC § 6402(a). No credit or refund shall be allowed or made after the expiration of the period of limitation prescribed in IRC § 6511(a), unless a claim for credit or refund is filed by the taxpayer within such period. IRC § 6511(b)(1).

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No refund or credit will be allowed after the expiration of the statutory period of limitation applicable to the filing of a claim therefore except upon one or more of the grounds set forth in a claim filed before the expiration of such period. Proc. and Admin. Reg. § 301.6402-2(b)(1). A "claim must set forth in detail each ground upon which a credit or refund is claimed and facts sufficient to apprise the Commissioner of the exact basis thereof. . . . A claim which does not comply with this paragraph will not be considered for any purpose as a claim for refund or credit." Id.

A claim for refund of an overpayment of income taxes shall be made on the appropriate income tax return. In most LMSB cases, this will be a Form 1120X. Proc. and Admin. Reg. § 301.6402-3(a)(1) and (3); see Notice 2002-44, 2002-27 I.R.B. 39 (July 8, 2002) (setting forth specific requirements for corporate research credit refund claims).

No suit or proceeding shall be maintained in any court for the recovery of any internal revenue tax alleged to have been erroneously or illegally assessed or collected, or of any penalty claimed to have been collected without authority, or of any sum alleged to have been excessive or in any manner wrongfully collected, until a claim for refund or credit has been duly filed with the Secretary, according to the provisions of law in that regard, and the regulations of the Secretary established in pursuance thereof. IRC § 7422(a).

The Service has the power to waive the specificity requirements of § 301.6402-2(b)(1) of its Procedural and Administrative Regulations. United States v. Andrews, 302 U.S. 517 (1938) (discussed further below). However, the Service has no power to waive or otherwise relax the mandatory statutory requirements of sections 6402(a) and 6511(b)(1). United States v. Garbutt Oil Co., 302 U.S. 528, 533-35 (1938). That is, the Service simply has no authority to issue a refund based on an untimely refund claim. Angelus Milling Co. v. Commissioner, 325 U.S. 293, 296 (1945); Garbutt Oil Co. 302 U.S. at 528.

1. Notice 2002-44 - Research Credit Claim vs. Original Return Filing

The service's policy over the years had been to encourage field examiners to accept "informal" claims for refund even though in many instances the claim did not comport with the applicable regulations. However, the Service has taken steps through the issuance of Notice 2002-44, 2002-2 C.B. 39, to understand the filing patterns that may result from definitional changes to IRC § 41 and bring specialized expertise into the Research Credit claim classification process. Thus, effective July 8, 2002, IRS examiners should not accept informal research credit claims for examination and should advise TPs to file their claim(s) under the procedures as outlined in the Notice. If a claim does not provide the required detailed information as required under Notice 2002-44, the claim should be returned to the taxpayer for correction of deficiencies.

2. IRC §280C Election

An election to compute the IRC § 41 credit at the reduced credit rate, as set forth in IRC § 280C(c)(3), can only be made on a timely filed original tax return. The taxpayer is precluded from making this election on an amended return/claim for refund.

Where such an invalid election is identified, the examiner should bring this issue to the taxpayer's attention and afford it the opportunity, if available, to further amend its amended return/claim for refund by properly recomputing its research credit under IRC § 280C(c)(1) and (c)(2). Such an amendment must comply with the specific requirements for such claims under Notice 2002-44. Regardless of whether the

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amendment is a claim for refund or the reporting of research credit to be carried back or forward under IRC § 39, the examiner shall direct the taxpayer to file an amended return following the procedure prescribed in the Notice. Team Managers no longer have the discretion to directly receive a claim for refund that corrects a prior invalid IRC § 280C(c)(3) election. If a Taxpayer fails to properly amend a claim for refund to comport with the requirements of IRC § 280C(c), the claim should be disallowed.

3. Amended Refund Claims (Pre-Statute of Limitations Expiration)

A taxpayer may amend an inadequate or incomplete claim for refund at any time before (1) it has been rejected and (2) the period of limitations for filing a claim has expired. Angelus Milling Co., 325 U.S. at 293; United States v. Memphis Cotton Oil Co., 288 U.S. 62 (1933). If a claim for refund has not been rejected and the period of limitations is open, the claim may be amended, and the amendment and the original claim constitute a single claim. Id.

4. Amended Refund Claims (Post-Statute of Limitations Expiration)

It is well-settled that after the statute of limitations has expired, a timely refund claim based upon a specific item or items (i.e., a specific claim), whether deemed "protective" in nature or not, may be amended to claim a higher refund amount only where the facts alleged in the amendment necessarily or naturally would have been discovered by the Service in any investigation of the original, timely refund claim. See, e.g., Pink v. United States, 105 F.2d 183 (2d Cir. 1939); Lockheed Martin Corp. v. United States, 39 Fed. Cl. 197 (1997), rev'd on other grounds, 210 F.3d 1366 (Fed. Cir. 2000); cf. Honeywell Inc. v. United States, 973 F.2d 638 (8th Cir. 1992) (holding that a taxpayer could not amend a refund claim that was based on a credit for hiring welfare recipients because the amendment involved a new factual basis, namely, the hiring of 622 employees not involved in the original claim). See FSA 200211006 (October 23, 2001) (under IRC § 6110, FSAs may not be used or cited as precedent). The Service cannot waive the bar to untimely amendments of specific claims. Angelus Milling Co., 325 U.S. at 296; Garbutt Oil Co. 302 U.S. at 532-35.

See IRS FSA 200211006 2001 FSA LEXIS 241 which addresses amendments to specific claims.

5. General Claims/Waiver

A general claim is a claim that does not set forth the specific factual basis for the refund, but instead is essentially a conclusory statement that an amount of tax has been overpaid. United States v. Factors' & Finance Co. 288 U.S. 89 (1933); United States v. Memphis Cotton Oil Co., 288 U.S. 62 (1933). Research credit claims, by their very nature, will in almost all cases be specific claims.

In Memphis Cotton Oil, a timely claim was filed, constituting a bare demand for a refund in a stated amount. After the statutory period had expired for filing an original claim and the claim had been examined by the Service on its merits, the taxpayer was permitted to amend its claim to state for the first time a specific ground upon which he sought such refund. Waiver could apply because a full investigation of the broad original claim in Memphis Cotton Oil required the Service to consider every ground or theory under which the taxpayer might conceivably be entitled to a refund, including that set forth in the later untimely amendment. The Service could have properly rejected the claim filed in Memphis Cotton Oil for its very vagueness that violated the specificity of the regulations. However, since the Service waived

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this right by examining the claim on its merits, the taxpayer was free to file an amendment thereto setting forth any specific ground or basis for relief encompassed within the vast scope of the original timely claim. See also Factors & Finance Co., 288 U.S. at 93.

Thus, the waiver defense can apply only if (1) the original general claim has not been rejected at the time the amendment is filed and (2) the amendment merely makes clear specific matters the Service has already considered by investigating the original, formally defective claim. Memphis Cotton Oil Co., 288 U.S. at 70-72. It is critical under the waiver doctrine that the claim has been investigated or heard. Id. The Service does not waive the specificity requirement of the regulation merely by administrative inaction in not rejecting a general claim. Id. The taxpayer must establish that the Service has unmistakably focused on the matters in dispute and heard them on their merits. Angelus Milling Co., 325 U.S. at 293. In Angelus Milling, the Supreme Court stated:

[t]he showing should be unmistakable that the Commissioner has in fact seen fit to dispense with the formal requirements and to examine the merits of the claim.... The Commissioner's attention should have been focused on the merits of the particular dispute. The evidence should be clear that the Commissioner understood the specific claim that was made even though there was a departure from form in its submission. Id. at 297-98.

6. Lockheed Martin Decision

The Federal Circuit addressed these rules in its Lockheed Martin decision, where it affirmed the Court of Federal Claims' conclusion that the taxpayer's claims for increased refunds, based upon the research credit, were new, untimely claims:

Lockheed Martin filed timely refund claims for its tax years 1984 through 1988, seeking additional research credits attributable to fixed-price government contracts. The refund claims were disallowed by the Service, and Lockheed Martin filed suit in the Court of Federal Claims. During the pendency of the refund suit, but after the expiration of the statute of limitations for these tax years, Lockheed Martin moved for an order clarifying the scope of the complaint. Specifically, Lockheed Martin sought to include in its complaint additional QREs from the same contracts from which QREs were drawn for the timely refund claims.

The Court of Federal Claims denied Lockheed Martin's motion, concluding that the "clarifications" sought were new, untimely refund claims barred by the statute of limitations, as the additional amounts sought from the same contracts could have been separately raised as sole or independent claims for refunds, and thus were not factually integral to or subsidiary of plaintiff's timely refund claims. The Court of Federal Claims rejected Lockheed Martin's reliance on cases where the legal and factual bases asserted had been identified in the claim, but only the amount claimed had been miscalculated. Notably, it held that as a matter of law, the facts alleged in support of greater refunds would not necessarily have been discovered by the Service in auditing the original, timely refund claims. Lockheed Martin, 39 Fed. Cl. at 197. The Federal Circuit affirmed on this issue. Lockheed Martin, 210 F.3d at 1366. Accordingly, examiners should carefully scrutinize any additional amounts of research credit claimed after the statute of limitations for filing a claim for credit or refund has expired

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VII. Examination Tools & Records

A. Anatomy of Proposal (B&P) Effort

1. Government Activities		
	a. Concept Development	System Design RFP Development
	b. RFP Release	
2. Contractor Activities		
	a. Pre-RFP Activities	Marketing; Travel; Technical Presentation to Customer
	b. Develop Draft Proposal	
	c. Receive RFP	
	d. Proposal Activities	Proposal Duration 1-3 Months; Storyboards made of entire proposal; Red & Blue Team Reviews – Storyboards & Proposal; All Art Professionally Drawn; All Text Edited by Technical Writers; Professionally Produced Proposal Volumes
	e. Proposal Submitted	
	f. Responses to CRs/DRs	CR – Clarification Request; DR – Deficiency Report
	g. Best & Final Offer	

B. Flow Chart of Audit Tasks

1. Define Research Credit Claim	Analyze & organize claimed expenditures and Taxpayer's position for each element of the claim	
2. Request Documentation	See below for a non-exclusive listing of documents	
3. Ensure that cost type contracts and/or CLINs which are fully funded are eliminated from the QRE pool		
4. Analyze Program Activities	<ul style="list-style-type: none"> • When was program go-ahead? • What was the nature of the research effort or activity? • When was CDR held for the system or sub-system? 	

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	<ul style="list-style-type: none"> • Were there development testing? When did it occur? • What design validation tests were there and when did the tests occur? • How many prototypes were used in the design validation tests? Was the number of prototypes necessitated by technical or business reasons? • When did tooling up begin? • Beginning of manufacturing. When did production of the first business unit commence? 	
5. Audit Expenditures at WBS Level		
For Example:		
Requirement	WBS Elements	SOW Tasks
System Specification 1000 Air Vehicle 1100 Airframe 1110 Wing	1000 Air Vehicle 1100 Airframe 1110 Wing	3.1 Air Vehicle (WBS 1000) Design, develop, produce and verify, complete air vehicles defined as airframe propulsion, avionics and other installed equipment.
6. Conduct Interviews to Clarify Unknown		
7. Document Audit Results		

C. Documents

1. Request For Proposal (RFP)	For B&P and other audits
2. Proposal briefings -- Bid Decision and Kickoff Briefings	For B&P audits
3. B&P authorizing document	For B&P audits
4. The Proposal	Useful for all audits. It provides, in part, the following information: Technical design and design heritage;

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	<p>Design changes from existing designs; Design risk - low risk means the taxpayer knows how to make changes from the outset; Program Management Plan; Cost analysis (labor rates and materials).</p>
5. IR&D Brochures for tax years being audited and prior years	It provides data on actual research performed
6. Contract	<p>It provides the following information: Nature of the contract (e.g., design/development, development using COTS components, or production); Terms and Conditions; Statement of Work (SOW); Work Breakdown Structure (WBS); PDR and CDR requirements; Test requirements.</p>
7. Subcontractor documentation	Purchase order, subcontractor proposal, subcontract, and PDR and CDR requirements
8. Engineering Changes Proposals and Contract Change Notices	Useful for audit when there is a second source contract awarded or when changes or improvement to an existing product or design is alleged to be creditable.
9. Program Management Reviews (PMR)	<p>PMR (a contractual requirement) shows: Program organization; Schedule of tasks, major events, and deliverables; Summarizes major accomplishments, (e.g., completion of the design).</p>
10. Contract Sales Orders	
11. Chart of Accounts and Task Descriptions	<p>Is a systematically arranged list of accounts applicable to a specific concern, giving account names, numbers and account descriptions. A chart of accounts accompanied by descriptions of account use and of the general operation of the books of account becomes a classification or manual of accounting.</p>
12. Company operations manuals	<p>Also known as the Company's Accounting Policy Manual or the Company's Practice and Procedural Manuals; It outlines the general principles and procedures under which the accounts of the organization are maintained and reported; A handbook of accounting policy, standards and practices governing the accounts of an enterprise and includes the classification of accounts.</p>