

Docket: 2017-3016(IT)I

BETWEEN:

CRL ENGINEERING LTD.,

Appellant,

and

HER MAJESTY THE QUEEN,

Respondent.

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Appeal heard on common evidence with the appeal of  
CRL Engineering Ltd. (2017-3018(IT)I),  
on May 11, 2018, at Regina, Saskatchewan.

Before: The Honourable Justice Guy R. Smith

Appearances:

Agent for the Appellant: Raman Paranjape

Counsel for the Respondent: David Smith

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**JUDGMENT**

IN ACCORDANCE WITH the attached Reasons for Judgment, the appeal in respect of the Appellant's 2014 taxation year is allowed, without costs, subject to the proviso that the amount at issue shall not be reduced by more than \$25,000, in accordance with Section 18.1 of the *Tax Court of Canada Act*, R.S.C. 1985, c. T-2.

The matter is referred back to the Minister of National Revenue for reconsideration and reassessment on the basis of the foregoing.

Signed at Toronto, Ontario, this 27th day of March 2019.

“Guy R. Smith”

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Smith J.

Docket: 2017-3018(IT)I

BETWEEN:

CRL ENGINEERING LTD.,

Appellant,

and

HER MAJESTY THE QUEEN,

Respondent.

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Appeal heard on common evidence with the appeal of  
CRL Engineering Ltd. (2017-3016(IT)I),  
on May 11, 2018, at Regina, Saskatchewan.

Before: The Honourable Justice Guy R. Smith

Appearances:

Agent for the Appellant: Raman Paranjape

Counsel for the Respondent: David Smith

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**JUDGMENT**

IN ACCORDANCE WITH the attached Reasons for Judgment, the appeal in respect of the Appellant's 2013 taxation year is allowed, without costs, subject to the proviso that the amount at issue shall not be reduced by more than \$25,000, in accordance with Section 18.1 of the *Tax Court of Canada Act*, R.S.C. 1985, c. T-2.

The matter is referred back to the Minister of National Revenue for reconsideration and reassessment on the basis of the foregoing.

Signed at Toronto, Ontario, this 27th day of March 2019.

“Guy R. Smith”

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Smith J.

Citation: 2019 TCC 65  
Date: 20190327

Dockets: 2017-3016(IT)I  
2017-3018(IT)I

BETWEEN:

CRL ENGINEERING LTD.,

Appellant,

and

HER MAJESTY THE QUEEN,

Respondent.

### **REASONS FOR JUDGMENT**

Smith J.

#### **I. Introduction**

[1] This is an appeal from the reassessments made by the Minister of National Revenue (the “Minister”) disallowing the Appellant’s claim for various scientific research and experimental development (“SRED”) expenditures and related investment tax credits with respect to the 2013 and 2014 taxation years.

[2] The sole issue is whether the Appellant’s activities constituted SRED within the meaning of subsection 248(1) of the *Income Tax Act*, R.S.C. 1985, c. 1 (5th Supp.) (the “Act”).

[3] As noted in *Zeuter Development Corp. v. R*, 2006 TCC 597, para. 20, this involves a two part analysis. The first step is to determine whether the activities meet the definition of SRED. If they do not, the appeal must be dismissed but if it is determined that the project as a whole is eligible, then the specific expenditures and activities must be vetted against the objectives of the project.

[4] Subsection 248(1) provides the following definition:

**scientific research and experimental development** means systematic investigation or search that is carried out in a field of science or technology by means of experiment or analysis and that is

- (a) basic research, namely, work undertaken for the advancement of scientific knowledge without a specific practical application in view,
- (b) applied research, namely, work undertaken for the advancement of scientific knowledge with a specific practical application in view, or
- (c) experimental development, namely, work undertaken for the purpose of achieving technological advancement for the purpose of creating new, or improving existing, materials, devices, products or processes, including incremental improvements thereto,

and, in applying this definition in respect of a taxpayer, includes

- (d) work undertaken by or on behalf of the taxpayer with respect to engineering, design, operations research, mathematical analysis, computer programming, data collection, testing or psychological research, where the work is commensurate with the needs, and directly in support, of work described in paragraph (a), (b), or (c) that is undertaken in Canada by or on behalf of the taxpayer,

but does not include work with respect to

- (e) market research or sales promotion,
- (f) quality control or routine testing of materials, devices, products or processes,
- (g) research in the social sciences or the humanities,
- (h) prospecting, exploring or drilling for, or producing, minerals, petroleum or natural gas,
- (i) the commercial production of a new or improved material, device or product or the commercial use of a new or improved process,
- (j) style changes, or
- (k) routine data collection; (activités de recherche scientifique et de développement expérimental)

[5] As noted by Justice Hogan in *1726437 Ontario Inc. (AirMax Technologies) v. R.*, 2012 TCC 376, para. 13, the statutory definition is based on a ‘catch and

release' concept since it first includes a broad category of eligible development activities under paragraphs (a) to (d) followed by items that are excluded under paragraphs (e) to (k).

[6] In *Northwest Hydraulic Consultants Ltd. v. The Queen*, 98 D.T.C. 1839, [1998] 3 C.T.C. 2520 (TCC) (“Northwest Hydraulics”), adopted by the Federal Court of Appeal in *RIS-Christie Ltd. v. The Queen*, [1999] 1 C.T.C. 132; 99 D.T.C. 5087 (FCA) (“RSI-Christie”) and *C.W. Agencies Inc. v. The Queen*, 2001 FCA 393 (“C.W. Agencies”), Justice Bowman, as he then was, set out the following five criteria (as summarized by the FCA in *C.W. Agencies*, para. 17) to assist in the analysis of the SRED activities:

1. Was there a technological risk or uncertainty which could not be removed by routine engineering or standard procedures?
2. Did the person claiming to be doing SRED formulate hypotheses specifically aimed at reducing or eliminating that technological uncertainty?
3. Did the procedure adopted accord with the total discipline of the scientific method including the formulation testing and modification of hypotheses?
4. Did the process result in a technological advancement?
5. Was a detailed record of the hypotheses tested, and results kept as the work progressed?

[7] Each of the questions in this “five-factor test” must be answered in the affirmative: *Lehigh Hanson Materials Limited v. The Queen*, 2017 TCC 205, para. 37. With respect to the first criterion, Justice Bowman clarified that the term “technical risk or uncertainty” must be such that it “cannot be removed by routine engineering or standard procedures” and that if “the resolution of the problem is reasonably predictable using standard procedure or routine engineering, there is no technological uncertainty”. The term “routine engineering” would refer to “techniques, procedures and data that are generally accessible to competent professionals in the field” (para. 16).

[8] With respect to the second criterion, Justice Bowman indicated (para. 16) that this involves five steps including i) the observation of the subject matter of the problem; ii) the formulation of a clear objective; iii) the identification and articulation of the technological uncertainty; iv) the formulation of a hypothesis designed to reduce or eliminate the uncertainty and finally v) the methodical and

systematic testing of the hypothesis or hypotheses. Although it was important to articulate the “technological uncertainty” at the outset of the project, an integral part of the process was the identification of new technological uncertainties as the research progresses using the “scientific method”.

[9] With respect to the third criterion, Justice Bowman clarified that “intuitive creativity and even genius may play a crucial role in the process” provided they operate within the total discipline of the scientific method, and that “what may appear routine and obvious after the event may not have been before the work was undertaken”. What is important is “the adoption of the entire scientific method” to remove a “technological uncertainty through the formulation and testing of innovative and untested hypotheses” (para. 16).

[10] With respect to the fourth criterion, Justice Bowman indicated (para. 16) that it referred to “an advancement in the general understanding (...) to persons knowledgeable in field” and that “the rejection after testing of an hypothesis is nonetheless an advance in that it eliminates one hitherto untested hypothesis”, adding that failure may reinforce “the measure of the technological uncertainty”.

[11] The fifth criterion is understood in the notion of “scientific method”. Again Justice Bowman clarified that “a detailed record of the hypotheses, tests and results must be kept as the work progresses” (para. 16), though this is not specifically required by the Act or the Regulations. This seems apparent since the expression “systematic investigation” appears in the opening words of the definition.

[12] Justice Bowman commented (para. 11) generally that “[m]ost scientific research involves gradual, indeed infinitesimal, progress. Spectacular breakthroughs are rare and make up a very small part of the results of SRED in Canada” before concluding that “the tax incentives given for doing SRED are intended to encourage scientific research in Canada” and that the legislative provisions should be given a “fair, large and liberal construction and interpretation as best ensures the attainment of its object” in accordance with section 12 of the *Interpretation Act*, R.S.C, 1985, c. I-21.

## II. The Evidence

[13] The Appellant is an engineering firm specialized in developing public transit related technology. It was incorporated in September 2009.

[14] Dr. Raman Paranjape, the Appellant's Chief Executive Officer, testified at the hearing. He holds a Ph.D. in engineering and is a professor of Electric Systems Engineering at the University of Regina. The Appellant's Chief Operating Officer, Craig M. Gelowitz, also holds a Ph.D. in engineering. He was present throughout the hearing but did not testify.

[15] The Appellant commenced its SRED activities as early as 2010 and it was ongoing during the subject taxation years. The Appellant described it as "A Real-Time Vehicle Arrival Prediction Model for Transitlive" (the "Project"). It was intended to develop the Appellant's web-based system using algorithms and a global positioning system ("GPS") data to provide accurate real-time for public transit buses.

### **1. Was there a technological risk or uncertainty?**

[16] The Appellant argued that the Project involved "developing a physically distributed, multi-computing platform using general purpose computing systems to create, communicate, integrate, analyse and report real-time, dynamic data to users of the transit systems and administrators" and that the technological uncertainty was whether "autonomous computational systems based on general-purpose computing units could be effectively deployed in order to provide accurate and real-time status information to both users and administrators in real-world transit systems". It was argued that the use of "general purpose computing systems" for that purpose is what "creates real scientific uncertainty."

[17] The Respondent argues that there was no scientific uncertainty and that the Project involved the use of existing technology, notably Global Positioning Systems or "GPS", and routine engineering or, as described in paragraph (f) of the definition "routine testing of materials, devices, products or processes".

[18] I note that the Appellant has not referred to a specific provision of the definition of SRED but that paragraph (b), noted above, refers to "applied research ... for the advancement of scientific knowledge with a specific practical application in view" and paragraph (c) refers to "experimental development ... for the purpose of achieving technological advancement for the purpose of ... existing materials, devices, products or processes, including incremental improvements thereto." Moreover, paragraph (d) refers to "work undertaken (...) with respect to engineering, design, operations research (...) directly in support, of work described in paragraph (a), (b), or (c) that is undertaken in Canada (...)." (My emphasis.)

[19] On balance, I find that the Respondent has taken a too narrow interpretation of these provisions and the criteria noted above and that the objectives which the Appellants sought to achieve were sufficiently uncertain during the subject years. If I had considered the evidence in the context of the tools that are widely known and available to consumers and commuters today, I would likely have reached a different conclusion. In the end, I conclude that the Appellant's Project was much more than "quality control or routine testing (...)" excluded by paragraph (f) of the Act, and that there was a "technological risk or uncertainty".

**2. Did the Appellant formulate a hypothesis aimed at reducing or eliminating the technological uncertainty?**

[20] A hypothesis can be described as a tentative and testable answer to a scientific question. It has been described as a "tentative assumption or explanation to an unknown problem" and "as a rule, this requirement is met by the existence of a logical plan devised to observe and resolve the hypothetical problem": *Maritime-Ontario Freight Lines Ltd. v. The Queen*, 2003 TCC 674, para. 14 ("Maritime").

[21] The Appellant described what it called its "over-arching hypothesis" as whether "autonomous distributed computing systems based on general purposes computing units [can] be effectively deployed in order to provide accurate real-time status information to both users and administrators in a real world transit system". The Respondent argues that the Project involved a series of unrelated and un-connected tasks and that there was no real hypothesis.

[22] While the hypothesis appears to be phrased more as a question than an assumption, I find that the Appellant had a "logical plan devised to observe and resolve the hypothetical problem" and that, as such, this criterion is satisfied.

**3. Did the procedure adopted accord with the total discipline of the scientific method including the formulation testing and modification of hypotheses?**

[23] The Appellant indicates that it installed and monitored "a set of computing units on transit vehicles (...) to examine how the system could function" and included various iterations of a code to test some aspect of the operating system that was "regularly updated to evaluate sequentially and progressively more complex options (...) and to examine alternatives". The Appellant argues that the



activities constituted a “progressive and systematic investigation” including adjustments to the sub-hypothesis, followed by new testing and documentation.

[24] Consistent with the arguments noted above, the Respondent maintained that the activities included a series of unrelated tasks with “different technical goals and objectives” that should not be considered as SRED. The basic thrust of this argument was again that the activities consisted of “routine testing” of devices or processes.

[25] I do not agree and find that Appellant applied the scientific method and that its activities were structured to remove a technological uncertainty through the formulation and testing of its hypothesis. Therefore, on balance, I find that the Appellant has satisfied this criterion.

#### **4. Did the process result in a technological advancement?**

[26] The Appellant argued that its activities were “focused on understanding the nature and characteristics of physically distributed general purpose multi-computing systems in a hostile and challenging environment”. Its results were reported in a scholarly journal (Exhibit A-2) though the Appellant conceded that its research activities were ongoing. It argued that its research provided a “launching pad for new achievements in distributed computing”.

[27] As noted above, paragraph (d) of the definition of SRED includes “work undertaken for the purpose of achieving technological advancement for the purpose of creating new, or improving existing, materials, devices, products or processes, including incremental improvements thereto”. (My emphasis.)

[28] There is necessarily a fine line between a “technological advancement” or “incremental improvements” to existing materials, devices, products or processes. This suggests that the Appellant need not prove that its activities were novel, but rather that there were incremental improvements to existing technology.

[29] On balance, I find that the Appellant has satisfied this criterion.

#### **5. Where detailed records kept as the work progressed?**

[30] The Appellant’s witness explained that “system snapshots were captured on a weekly basis and maintained in a document repository” that were accessible and regularly reviewed. It also maintained a “wiki” that was used to “log data,

methods, issues and results”. The documentary evidence, notably Exhibits A-1 and A-3, supported Dr. Paranjape’s oral testimony on this issue.

[31] On balance, I find that the Appellant has satisfied this criterion.

### III. Conclusion

[32] On the basis of the documentary and testimonial evidence adduced at the hearing, the Court finds that the Appellant has satisfied the five-factor test described in the case law and that it was engaged in SRED activities during the subject taxation years.

[33] Throughout this analysis, I have used the expression “on balance” to indicate that the Court was satisfied that the Appellant had rebutted the Minister’s assumptions. This simply reflects the notion that the burden of proof on the Appellant is the balance of probabilities — and not beyond a reasonable doubt, which is a higher standard that does not apply to appeals before this Court.

[34] Therefore, the appeals are allowed subject to the proviso that, given the Appellant’s election to proceed under the Informal Procedure, the amounts at issue shall not be reduced by more than \$25,000 per taxation year, in accordance with section 18.1 of the *Tax Court of Canada Act*, R.S.C. 1985, c. T-2.

Signed at Toronto, Ontario, this 27th day of March 2019.

“Guy R. Smith”

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Smith J.

CITATION: 2019 TCC 65

COURT FILE NOS: 2017-3016(IT)I,  
2017-3018(IT)I

STYLE OF CAUSE: CRL ENGINEERING LTD. v.  
HER MAJESTY THE QUEEN

PLACE OF HEARING: Regina, Saskatchewan

DATE OF HEARING: May 11, 2018

REASONS FOR JUDGMENT BY: The Honourable Justice Guy R. Smith

DATE OF JUDGMENT: March 27, 2019

APPEARANCES:

Agent for the Appellant: Raman Paranjape

Counsel for the Respondent: David Smith

COUNSEL OF RECORD:

For the Appellant:

Name:

Firm:

For the Respondent: Nathalie G. Drouin  
Deputy Attorney General of Canada  
Ottawa, Canada