

BETWEEN:

PAVEIT CONSTRUCTION INC.,

Appellant,

and

HIS MAJESTY THE KING,

Respondent.

Appeal heard on August 20, 2025, at Edmonton, Alberta

Before: The Honourable Justice John A. Sorensen

Appearances:

Agent for the Appellant: Ed Mierzewski

Counsel for the Respondent: Zakiyya Karbani

JUDGMENT

The appeal from the assessment of the appellant's 2017 taxation year is dismissed without costs.

Signed this 25th day of September 2025.

“J. A. Sorensen”

Sorensen J.

Citation: 2025 TCC 129

Date: 20250925

Docket: 2019-3604(IT)I

BETWEEN:

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REASONS FOR JUDGMENT

Sorensen J.

I. Overview

[1] Paveit Construction Inc. (“Paveit”) appealed the Minister of National Revenue’s (the “Minister”) reassessment denying its scientific research and experimental development (“SR&ED”) tax credit for its 2017 taxation year.

[2] Paveit is a paving company. It was incorporated under the laws of the province of Alberta and is based in Slave Lake. During the period in issue, it had 10 employees.

[3] Paveit’s 2017 SR&ED claim related to an undertaking described as the Mobile Roller-Compacted Concrete (“MRCC”) project (the “Project”). An unrelated company, Rock Solid Concrete Product Inc. (“Rock Solid”), received a SR&ED investment tax credit for developing the mixer that was used for the Project. At the hearing, Paveit argued that it collaborated with Rock Solid to field test the latter’s prototype mixer, which led to process improvements, and that its contribution to the Project was process development.

[4] The issue is whether Paveit's portion of the Project constituted experimental development according to the generally accepted analytical framework from *Northwest Hydraulic*.¹

II. Facts

[5] Robert Loroff, the President and Chief Executive Officer of Paveit, was the only witness at the hearing. No expert evidence was led by either party.

[6] Mr. Loroff was a credible and knowledgeable witness. He was able to articulately explain concrete products and the process of laying concrete. He was forthright in explaining Paveit's involvement in the Project and honestly and candidly admitted unhelpful facts.

[7] Paveit's agent, who prepared the SR&ED claim, offered commentary to provide context during the direct examination of Mr. Loroff. Notwithstanding the potential to relax the rules of evidence under the Informal Procedure Rules, I treated the agent's commentary as argument rather than evidence.² Where the agent's comments drew on his significant technical expertise,³ it would have been inappropriate to invite him to give any expert opinion.⁴ I considered the documents that were put to Mr. Loroff, and had regard to the respondent's book of documents.

[8] At the hearing, reference was made to the Guide for Roller-Compacted Concrete Pavements (2010), InTrans Project Reports, Institute of Transportation (Iowa State University – funded by the Portland Cement Association) (the "Guide"). The Guide was included in the Respondent's documents and brought to the Court's

¹ *Northwest Hydraulic Consultants Ltd. v The Queen*, [1998] 3 CTC 2520 ("*Northwest Hydraulic*").

² While a non-lawyer agent may be permitted to give evidence at a hearing under the Informal Procedure Rules, the evidence would be given under oath. An agent's evidence must concern relevant information not known to or ascertainable by the appellant. The non-lawyer agent would have to be a credible and reliable source of information, and their evidence should not include hearsay. In *Muszka v R*, 94 DTC 6076 ("*Muszka*"), the Federal Court of Appeal held that in addition to the evidence of the taxpayers, their accountant, acting as agent, should have been allowed to testify. The accountant knew the taxpayers' business and had prepared financial statements for the years in question. The taxpayers' evidence indicated they did not understand the financial statements, and the Federal Court of Appeal concluded that the taxpayers were denied the chance to present their cases because the accountant was not allowed to testify. *Muszka* did not necessarily establish a rule that non-lawyer agents must be allowed to testify in the normal course on any and all matters known to the actual taxpayer without a reason, and the judgment indicated that in any given proceeding it may be appropriate to refuse to allow an agent to testify.

³ Mr. Mierzewski apparently has multiple degrees, including graduate degrees in chemical engineering, is a professional engineer (P. Eng.), and is also experienced in accounting.

⁴ *Brampton Vee World Motors Limited, v The Queen*, 2005 TCC 34, (a judgment under the Informal Procedure Rules), relied on *Squamish Indian Band v R*, [1998] FCJ No. 330 (Fed TD) in which the Federal Court affirmed that the duty of experts to provide objective and impartial opinions is inconsistent with advancing arguments.

attention by the appellant's agent who examined Mr. Loroff on its contents. The Ministerial assumption at paragraph 5(r) asserted that the appellant relied on the Guide, and in cross-examination Mr. Loroff stated that he did in fact rely on it as a scientific reference for his understanding of hydration and crystal formation in concrete. Neither the authority nor the authenticity of the Guide were disputed by either party.⁵ Since both parties were aware of and reliant upon the Guide, I accepted it as context regarding Roller-Compacted Concrete ("RCC") generally.⁶

[9] RCC gets its name from the use of heavy, vibrating steel drums and rubber-tired rollers that compact the material. RCC has different proportions of materials within its mix compared to regular concrete, including greater fine aggregates which may be tightly packed and consolidated. RCC is known to be strong, economical and fast to use in construction. But because it is drier and stiffer, it is harder for regular machinery to mix and lay.

[10] RCC's strength depends on limiting air void content, and consistently compacted RCC produces best results. The Guide (page 3) explains:

With well-graded aggregates, proper cement and water content, and dense compaction, RCC pavements can achieve strength properties equal to those of conventional concrete, with very low permeability.

[11] Mr. Loroff explained the facts of concrete formation: when water and cement powder are mixed, crystals start to form; moving forming concrete is not ideal, because the developing crystals break, reducing the strength of the materials. Consequently, faster placement results in greater concrete strength. He explained that transporting cement from a centralized mixing site on a truck can be suboptimal because forming crystals are broken when the cement is placed and will not reform. Therefore, the closer the mixer is to the placement site, the better for concrete strength.

[12] The Guide stresses proper hydration, correct proportions, material density, and the importance of rolling the materials before they begin to harden. It sets out a

⁵ While the Guide was *prima facie* hearsay, it was not relied upon for the truth of its contents. The portions of Mr. Loroff's testimony that described how cement and concrete work was consistent with the information in the Guide. The Guide was useful in these reasons for judgment in three ways: 1) it affirmed the appellant's information from the outset of the Project; 2) Mr. Loroff's admission that he did not read all of it diminished the weight of his evidence; and 3) it provided basic and non-contentious context.

⁶ I note in passing that the copy of the Guide I reviewed was likely subjected to a scanning and optical character recognition process before it was printed, and that "OCR" process misfired, because the document was marred by frequent typographical errors that were otherwise difficult to explain. For example, the non-word "ffhal" was probably "final", "ffl e" was likely "the" and "ffl ese" was probably "these", when read in context.

table of compositional data and relative strength of concrete at test sites around the United States, and one in Canada. Section 5, “Structural Design of RCC Pavements”, summarizes experiments, with calculations, and sets out tables and charts concerning composition and strength of RCC. Section 7, “RCC Construction” concerns issues including the distance that mixed cement is hauled, climate, and maintaining hydration. The Guide confirmed that dry RCC would look dusty or grainy and may “tear” – and if adjusting water content does not fix the problems, then checking the aggregate gradation or plant calibration would be recommended. The Guide also noted that RCC should be compacted as soon as possible after being spread, especially in hot weather (at higher temperatures, strength is lost).

[13] Although the Guide was relied upon by the appellant, Mr. Loroff candidly admitted that he had not read all of it and that he may have been unaware of whether certain processes or practices were already known in the industry.

[14] Turning to MRCC, it is different from ordinary RCC, in that jobs are completed faster and yield higher strength “28 day” concrete. This assertion was supported by a table of results produced by Paveit for the Project, in comparison to data set out in the Guide. According to Mr. Loroff, MRCC generates stronger concrete because the cement is laid fast and compacted immediately, thus, as the crystals form, they are not being broken down.

[15] The MRCC Project involved using a mobile mixer that engaged more directly in laying cement, which reduced the time involved. Transportation is eliminated, and the cement goes from mixing to paving quickly in an MRCC process. According to Mr. Loroff, RCC technology ordinarily involves large mixing plants that feed concrete into dump trucks which transport the material and feed the pavers that lay the concrete. Plants are not mobile, and insofar as cement can set quickly, the distance a truck can travel is limited. Rock Solid designed a compact, mobile RCC mixer, then together with Paveit conducted five test jobs at client sites, not laboratories. Those jobs appear to have been commercial jobs for the clients.⁷

[16] The field tests of the Rock Solid mixer at client jobs were undertaken to determine if there were operational issues, including durability, ease of maintenance, and safety matters. There were also mix formulations to come to terms with. According to Mr. Loroff, Rock Solid initially mixed cement “quite wet” which caused problems with rolling it. While his evidence was not entirely clear on this

⁷ The respondent did not argue that the Project was not SR&ED by virtue of paragraph (i) of the definition of SR&ED in s. 248(1). Essentially, SR&ED does not include work with respect to (i) the commercial production of a new or improved material, device or product or the commercial use of a new or improved process.

point, Mr. Loroff also said that managing hydration issues during a test indicated that they should modify the paving machine. However, Mr. Loroff also indicated that the Project advanced knowledge because they learned to speed up the cement laying process, manage hydration, and how to manage its placement to ensure maximum strength and appearance – all of which speaks to process. Mr. Loroff noticed that after the MRCC was laid, Paveit had to address dryness on the surface of the concrete, which reduced its strength and visual appeal. According to Mr. Loroff, they did not want to use more water, because of the risk of losing strength in the concrete, so they used a second roller and then an all-terrain vehicle to put the sealing coat on the concrete to prevent evaporation from the top layer. Normally, they would take that step the day after concrete is laid, but in that particular scenario, they had to act fast or the surface would crumble (and, apparently, it did).

[17] To improve the process, Paveit purchased a new, special paving machine, presumably the purchase alluded to in their SR&ED claim, and which Mr. Loroff said was imported from Europe. Using the imported paver meant they could complete the rolling process faster, which would seal the cement and limit evaporation of the water used in the mix.

[18] Paveit also tried out different “sealers”, different mixing compositions, and wetness variations and they also checked for component wear. Paveit asserted that after testing revealed component wear, the mixer (which belonged to Rock Solid) was reinforced.

[19] According to Mr. Loroff, Paveit identified issues and advanced the science of concrete placement by using less water, shorter “pulls”,⁸ faster compaction and immediate sealing. Thus, the entire exercise involved two steps: first, Rock Solid’s design of the mixer and, second, the design of the concrete laying process which originated in the testing phase of the mixer. When asked in cross-examination to identify the scientific or technological uncertainty that Paveit was trying to resolve, Mr. Loroff said:

We were trying to achieve a higher strength RCC with a mobile mixer, and to allow smaller projects in smaller communities -- have the ability to have this product available to them.

⁸ In this context, “pull” means laying materials from the paver, and seams that arise between lines of concrete are problematic because they cannot be properly compacted. To manage seams, Paveit would conduct shorter “pulls” side-by-side, and this would seemingly allow each “pull” to sit with or merge with its neighbor, because a short “pull” is faster and thus the material is less likely to dry out between pulls.

[20] When asked to identify a hypothesis, Mr. Loroff essentially said they investigated whether reducing concrete placement time would improve its strength. He also said that, secondarily, they wanted to see if they could reduce the amount of cement powder that they used. The management of hydration was also identified. With respect to how strength was documented, Mr. Loroff pointed to the tables affirming the high 28-day concrete strength results, and those tables were supported by source data provided to Rock Solid. The strength testing was composed of standard industry procedures.

[21] On cross-examination, Mr. Loroff was asked if his projects involved improving a procedure that already existed. He said yes, but the procedures were different because of lower water use. He reiterated that they tried to reduce the amount of cement to achieve cost savings at higher strengths. That said, he also admitted that Paveit relied on existing industry knowledge to carry out the Project, including existing science concerning cement hydration and crystal formation.

[22] Mr. Loroff conceded that the work did not generate new knowledge about concrete crystal growth or hydration and applied known principles to optimizing the mixing and placement process, thus the technological uncertainty had already been resolved in the literature available before the Project. That said, he maintained that they achieved additional strength with lower water and rapid compaction which he said was an industry first.

[23] Mr. Loroff's cross-examination confirmed that the results of the Project did not appear in any technical journals, result in any patents or industry standards, or generate any published documentation. Paveit and Rock Solid did sign a confidentiality agreement with a third party for the purpose of considering whether the MRCC work may be patentable or publishable, among other things, however, on cross-examination Mr. Loroff stated that from his perspective, the agreement was not related to the SR&ED claim.

[24] There was nothing documented that could show a broader benefit beyond Paveit's own operations. No contemporaneous records, such as notes, test sheets, data logs, maintained during each test, showed how results compared to hypotheses.

[25] Paveit's notice of objection argued, among other things, that Thomas Edison's invention of the light bulb was "trial and error" and that it was still research: "in some situations you are grappling with the unknown, and making decisions based on observation and intuition". The use of trial and error was acknowledged by Mr. Loroff:

... there was a lot of trial and errors, and a lot of errors that we had to do repairs to. We've done projects where we ended up saw cutting out large portions, repairing them, and carrying on. And in one instance, we even -- because of the surface, was damaged so much that we covered that concrete. The structural strength was there, but the surface deterioration wasn't what the client wanted, so we actually covered it with asphalt to make it a viable product for him.

[26] Mr. Loroff further explained that during field testing they managed many variables and solved the issues that came up, for example, too much water in their cement mixes left visual tracks on the concrete. The solution was to use less water. Further, environmental factors were a problem, including heat and wind. They solved for those risks by working faster. On a hot day, the concern was that the surface of the poured cement would dry out, and they faced the challenges of working to a schedule while working with low water content cement.

[27] When queried, Mr. Loroff affirmed that they did not keep detailed records of their testing, other than some basic entries he made in a journal. The information that Paveit gathered was also known to other employees. He said that they collectively remembered problems from particular tests and evolved a practice of:

... having the tamper bar and the vibrator on the paver, and the roller right behind, and then spraying right behind the roller. So it didn't -- it didn't evaporate, so the moisture stayed in to hydrate the cement, and that's what gave us the ... to achieve the higher strengths.

[28] Regarding tracking the testing process, Mr. Loroff also stated:

Well, we are field testing ... we implemented the problems, solved the problem, and implemented them as we move forward. And then, we did not keep track of that on -- on a journal...

III. Law

[29] SR&ED is exhaustively defined in s. 248(1) of the *Income Tax Act* (Canada)⁹ as: 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,

⁹ *Income Tax Act*, RSC 1985, c. 1 (5th Supp.) (as amended) (the "Act"). Statutory references are to the Act unless otherwise noted.

- 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;

[30] As noted above, the SR&ED category with which this appeal is concerned is paragraph (c), experimental development, and the issue is whether the appellant's activities came within the scope of paragraph (c). As such, I need not consider any provisions beyond the definition cited above.

[31] As noted in *Canaftric*,¹⁰ experimental development cases are typically fact-driven. Courts apply the *Northwest Hydraulic* analytical framework as described succinctly at paragraph 17 of *CW Agencies*,¹¹ as follows:

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?

[32] As noted at paragraph 86 of *Canaftric*, parties have argued that the five criteria from *Northwest Hydraulic* are not mandatory because they are not found in the wording of the legislation. Paveit’s agent lightly touched on the source of the usual analytical criteria in SR&ED cases and whether they are rooted in the Act. That style of argument was rejected by the Federal Court of Appeal in *National R&D*:

... National's argument proceeds on a misunderstanding of the relationship between the courts and legislation. The criteria relied on by the judge are not ultra vires subsection 248(1), rather they reflect the court's understanding of what Parliament intended by subsection 248(1) (*Kam-Press* at para. 6; see also Justice Robert Sharpe, *Good Judgment: Making Judicial Decisions*, “The Generality of Law” (Toronto: University of Toronto Press, 2018) at 54). Parliament and the legislatures rely on the courts to give definition, amplitude and precision to statutory language as required by the circumstances of the case. The resulting understanding of legislation as expressed in the jurisprudence is not an improper exercise of judicial legislation, rather it is precisely what courts are required to do: “Generality gives the law its objective, rational, and systematic quality. It is what distinguishes the law from the judicial decision applying it” (Sharpe at 54).¹²

¹⁰ *Canaftric Inc. v The King*, 2023 TCC 108 (“*Canaftric*”).

¹¹ *CW Agencies Inc. v R*, 2001 FCA 393 (“*CW Agencies*”).

¹² *National R&D Inc. v Canada*, 2022 FCA 72 (“*National R&D*”), at paragraph 12. See also *Kam-Press Metal Products Ltd. v Canada*, 2021 FCA 88, at paragraph 6.

[33] The onus is on an appellant to demonstrate that their activities qualify as SR&ED.¹³ The Court has generally held that the standard in SR&ED appeals is the usual civil standard – balance of probabilities.¹⁴

IV. Analysis

1. Was there a technological risk or uncertainty which could not be removed by routine engineering or standard procedures?

[34] The first criterion from *Northwest Hydraulic* connects with the technological advancement requirement within the SR&ED definition: there cannot be technological advancement if the means to achieve a result are known.¹⁵ Further, as noted above, the technological risk or uncertainty must not be resolvable by routine engineering or standard procedures (where “routine engineering” means techniques, procedures and data that are generally accessible to competent professionals in the field).¹⁶

[35] Whether uncertainty exists is determined based on existing scientific and technical knowledge and is not subjectively determined from the perspective of a claimant.¹⁷ Reaching conclusions regarding routine engineering or standard procedures in a scientific or technology space is challenging, and in general expert evidence is helpful.¹⁸

[36] The Minister’s assumption pled at paragraph 5(q) relates to the first *Northwest Hydraulic* criterion:

q) the existing technological and knowledge base, within the concrete placement industry, was sufficient and used by Appellant to carry out the Project;

[37] The evidence in this case does not support the conclusion that any technological risk or uncertainty was identified. Paveit ran five tests by using the Rock Solid mixer and its own paver to lay concrete. Some of these exercises produced encouraging results, and others did not, due to either environmental conditions or excess water. While this was initially framed as field testing the mixer,

¹³ *DAZZM Inc. v The King*, 2024 TCC 129, at paragraph 88 and *National R&D Inc. v The Queen*, 2020 TCC 47, at paragraph 27 and as affirmed at 2022 FCA 72, at paragraphs 16 and 17.

¹⁴ *R&D PRO-innovation Inc. v The Queen*, 2015 TCC 186, at paragraph 34 (aff’d 2016 FCA 152)

¹⁵ *Les Abeilles Service de Conditionnement Inc. v R*, 2014 TCC 313 (“*Les Abeilles Service*”), at paragraph 142.

¹⁶ *Northwest Hydraulic*, at paragraph 16.

¹⁷ *Ibid.*

¹⁸ *Laforest Marketing Internationals Inc. v The Queen*, 2019 TCC 45, at paragraph 45.

Paveit's SR&ED activity was also cast as process development – learning to deploy the mobile mixer and paver while managing hydration, amount of cement powder, “pull” duration, speed and sealing to maximize strength.

[38] Respectfully, and without wishing to sound reductive, it is unclear how running a concrete laying process and verifying the outcomes, on their own, would meet the first criterion for a valid SR&ED claim. With respect to Paveit's process development argument, I acknowledge that this Court has previously accepted that “[w]ork on combining standard technologies, devices and/or processes is eligible if non-trivial combinations of established (well-known) technologies and principles for their integration carry a major element of technological uncertainty... called a ‘system uncertainty’.”¹⁹ However, in *Béton mobile* (another mobile cement case),²⁰ this Court also stated:

... creating a new product using techniques, procedures and data that are generally accessible to competent professionals in the field is not SR&ED even if there is doubt concerning the way in which the objective will be achieved. In other words, the mere fact that a product does not exist does not necessarily support the inference that its development involves technological or scientific uncertainty ...

[39] A further problem for Paveit is some of its work involved providing feedback on the mixer: Paveit said that after testing revealed component wear, the Rock Solid mixer was reinforced. The problem here is that the development of the Rock Solid mixer was already the subject of Rock Solid's own SR&ED claim and routine testing is excluded from the SR&ED definition.

[40] Whether the combination of known technology, devices and processes in this case was non-trivial is difficult to ascertain. No expert evidence was led in this case and, as a result, it was somewhat challenging to be certain about what precisely might constitute system uncertainty, routine engineering or standard procedures. I reiterate the point already made in the footnotes that although Paveit's agent had substantial expertise, he could not serve as both representative (advocating for an outcome) and expert (independent and objective). I recognize that Mr. Loroff testified that the low water and rapid compaction strategy was an industry first. He said they worked drier and faster. However, the weight of this evidence, drawing on his expertise, is mitigated by his admission that he did not read the whole Guide.

¹⁹ *1726437 Ontario Inc. (AirMax Technologies) v The Queen*, 2012 TCC 376, at paragraph 17.

²⁰ *Béton mobile du Québec Inc. v The Queen*, 2019 TCC 278, at paragraph 43. This case was later relied on in a further SR&ED case involving cement mixing and pouring processes, *Atelier Béton Inc. v The Queen*, 2022 TCC 2.

[41] Known parameters in the making and laying of cement include hydration, proportioning of cement elements, density, and timing (rolling before hydration starts to harden the materials). Other considerations include the distance that mixed cement is hauled and climate, as well as optical results. In my view, a person in the concrete business would be expected to know the parameters of cement creation and placement *and* how the parameters interact to optimize results – just as a photographer might know to vary aperture, shutter timing and light sensitivity (aka speed) depending on the result being sought. Mr. Loroff also acknowledged that he relied on existing industry knowledge, including existing science concerning cement hydration and crystal formation, and applied known principles for optimizing mixing and placement of cement.

[42] The onus is on an appellant to establish that an uncertainty could not be resolved using routine engineering or standard procedure.²¹ An appellant should also demonstrate that the uncertainty in question is a gap within existing scientific or technological knowledge, and not simply a matter unknown to the appellant.²² Due to the lack of convincing evidence, I am not persuaded that Paveit’s work resolved a system uncertainty or that it went beyond 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?

[43] *Maritime-Ontario Freight Lines* defined hypothesis as follows:²³

A hypothesis is 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.

[44] This second *Northwest Hydraulic* criterion connects with the concept of conducting a “systematic investigation or search” as set out in the definition in s. 248(1). *Northwest Hydraulic* set out a five-stage process to determine whether the claimant formulated hypotheses to seek to reduce or eliminate technological uncertainty, as follows:

- (a) the observation of the subject matter of the problem;

²¹ *Manning Canning Kitchens Inc. v The King*, 2024 TCC 159, at paragraph 13.

²² *Ibid*, at paragraph 16 citing *Canafric*.

²³ *Maritime-Ontario Freight Lines Ltd. v R*, 2003 TCC 674, at paragraph 14.

- (b) the formulation of a clear objective;
- (c) the identification and articulation of the technological uncertainty;
- (d) the formulation of an hypothesis or hypotheses designed to reduce or eliminate the uncertainty;
- (e) the methodical and systematic testing of the hypotheses.²⁴

[45] The assumption at paragraph 5(s)(i) of the reply stated:

s) with respect to the Project, the Appellant did not:

- (i) formulate, plan and execute the testing, through experiment or analysis, of any hypothesis aimed at addressing any shortcoming or limitation in relation to the underlying science or technology of concrete placement;

[46] If a technological uncertainty was not ascertained, it is difficult to see how specific hypotheses targeting such uncertainty could be found. That said, even if there was an identified technological risk or uncertainty, the evidence in this case does not support the conclusion that a *bona fide* hypothesis was both formed and tested. As noted above, a hypothesis is a tentative assumption or explanation to address a problem and would be demonstrated by a logical plan to observe and resolve the hypothetical problem. More broadly, the requirements are that a problem would be observed, an objective formulated, a technological uncertainty identified and stated, and a hypothesis formed to reduce or eliminate the uncertainty, followed by a methodical and systematic testing of the hypothesis.

[47] In argument, Paveit's agent said that in the field, Paveit achieved high strength concrete, and thus hypothesized that it had to do with preserving crystal growth and managing minimum hydration. The respondent's counsel argued that Paveit did not formulate or document any hypotheses aimed at solving technological problems but rather adjusted standard variables such as mixing time, material proportions, and equipment configuration, all of which fall into routine operational improvements, and not SR&ED.

[48] Paveit's agent argued that under real world conditions, it is difficult to form a hypothesis, follow a scientific procedure and test the hypothesis, because one cannot hold key variables constant and vary only one variable. That may be so, but in the

²⁴ *Northwest Hydraulic*, at paragraph 16.

circumstances, and in my opinion, “real world” testing with multiple uncontrolled variables looks more like trial and error than a scientific method.

[49] Paveit did not meet the requirements of the second criterion because of the lack of rigor in relation to the formulation of a hypothesis. As discussed under the next heading, the unfolding of the Project was marked by observation and “trial and error” more than the formulation of a hypothesis designed to reduce uncertainty that was then methodologically and systematically tested.

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

[50] With respect to the third criterion, *Northwest Hydraulic* explained that while “intuitive creativity and even genius” may play a role, they must operate within the discipline of the scientific method. According to *Joel Theatrical Rigging*,²⁵ the third criterion under *Northwest Hydraulic* confirms that procedures adopted should accord with established and objective principles of the scientific method, characterized by:

- trained and systematic observation,
- measurement and experiment, and
- the formulation, testing and modification of hypotheses (it is this third characteristic of the third requirement that overlaps with the fourth and fifth stages of the second requirement).

[51] *Joel Theatrical Rigging* also suggested at paragraph 40 that “trial and error” may not fall within the scientific method. The problem with trial and error is that it is not systematic, although it is conceivable that there may be a place for trial and error within a broader and more structured methodology. Paveit’s work was substantially, and perhaps exclusively, composed of trial and error, thus it fails the third requirement of *Northwest Hydraulic*.

4. Did the process result in a technological advancement?

[52] This fourth *Northwest Hydraulic* criterion does not require a claimant to demonstrate a successful outcome *per se*: if a project was commenced for a valid

²⁵ *Joel Theatrical Rigging Contractors (1980) Ltd. v R*, 2017 TCC 6, at paragraph 33 (“*Joel Theatrical Rigging*”).

purpose, namely, to achieve a technological advancement, it may qualify even if it did not produce a useful result.²⁶ In other words, an “advancement” may include the rejection of a hypothesis.²⁷

[53] This fourth criterion does not stand alone, and connects back to the first criterion, as confirmed in *Les Abeilles Service* at paragraph 142:

It must be borne in mind that [the *Northwest Hydraulic* criteria] are used to help determine whether or not a technological advancement has occurred. The first criteria, technological uncertainty, is one way of dealing with the technological advancement criteria; there can hardly be a technological advancement if one already knows how to achieve the end result ...

[54] As discussed above with respect to the first criterion, I concluded that Paveit did *not* establish an uncertainty that was a gap within existing scientific or technological knowledge, that could not be resolved using routine engineering or standard procedure, therefore it logically follows that a technological advancement cannot be found.

[55] Rejecting a hypothesis could result in an advancement. However, here again the various requirements set out in *Northwest Hydraulic* overlap and, since I concluded that Paveit did not meet the requirements of the second criterion, it logically follows that there was no rejection of a hypothesis at this fourth step in the analysis.

5. Was a detailed record of the hypotheses tested, and results kept as the work progressed?

[56] *Northwest Hydraulic* asks whether a detailed record of the hypotheses tested was maintained, and results kept as the work progressed, although that case also noted that this is not an express requirement of the Act. In *RIS-Christie Ltd.*,²⁸ at paragraphs 14 and 15, the Federal Court of Appeal affirmed that evidence must be adduced by a claimant to establish that research was undertaken, that it was eligible for favourable tax treatment, and that tests were conducted systematically – a higher threshold than simply conducting research and testing. The Federal Court of Appeal stated that the only “sure-fire” way of establishing that research was undertaken systematically is to lead documentary evidence that would reveal the logical

²⁶ *Canafvic* at paragraph 90.

²⁷ See archived CRA position “Eligibility of Work for SR&ED Investment Tax Credits Policy – 2015”, cited in *Formadrain Inc. c R*, 2017 TCC 42, at paragraph 114.

²⁸ *RIS Christie Ltd. v Canada*, [1999] 1 CTC 132 (FCA).

progression between each test and the prior and later tests. That said, the Court left open the possibility to explain the failure to lead evidence, in which case oral evidence may be sufficient. The example given was where research notes were accidentally destroyed. The Court also allowed that if a technological advancement was achieved, systematic research might be inferred. The Tax Court has concluded in numerous cases that the documentation criterion is not mandatory.²⁹

[57] The documentary evidence in this case was lacking. There were tables of test results, from each of Paveit and Rock Solid. However, as noted above, when asked about documentation to show the methodical progression from hypothesis through testing to conclusion, Mr. Loroff advised that no such information existed. He confirmed that Paveit could not provide contemporaneous records, such as notes, test sheets, or data logs, maintained during each test, showing how results compared to a purported hypotheses. Further, there was no intervening event that deprived Paveit of its documents - rather, they never existed. Paveit's documentation fell short of what would reasonably be expected in order to meet the final *Northwest Hydraulic* criterion.

V. Conclusion

[58] For the foregoing reasons, Paveit's Project did not meet the requirements for a valid SR&ED claim, and the appeal must therefore be dismissed.

Signed this 25th day of September 2025.

“J. A. Sorensen”

Sorensen J.

²⁹ *Canafric* at paragraphs 108 and 109.

CITATION: 2025 TCC 129
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STYLE OF CAUSE: PAVEIT CONSTRUCTION INC. AND HIS MAJESTY THE KING
PLACE OF HEARING: Edmonton, Alberta
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REASONS FOR JUDGMENT BY: The Honourable Justice John A. Sorensen
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