Project Name:	Clevor - Oracle + witness deceased (LOSS)	**Start Date:**	2020-01-01
Project Number:	2001	**Completion Date:**	2021-05-21

Project Details:

Scientific or Technological Objectives:

This project example is based on the Tax Court of Canada judgment for CLEVOR TECHNOLOGIES INC. AND HER MAJESTY THE QUEEN (2019 TCC 166).

the appeal pertains to the Minister's denial of the Appellant's claim for scientific research and experimental development (SR&ED) expenditures of $72,046, which if recognized would entitle the Appellant to refundable investment tax credits under the Act in the amount of $24,991.

[2] The Appellant was unrepresented by counsel. Its only witness was its president, Sheila Maithel. Her evidence established that the Appellant is a Saskatchewan corporation engaged in the business of software development for operational management. Prior to 2013 it had developed a sophisticated project management software application termed the "Clevor Schedule Optimizer" (CSO). The function of the CSO software was that, upon having data inputted respecting variables relevant to execution of a particular project (such as a construction or mining project), the software could relatively promptly determine the timing and sequencing of steps for optimally efficient (i.e., earliest) completion of that project.

[5] The Appellant sought SR&ED benefits from two activities it engaged in in 2013 in conjunction with its commercially successful software, CSO.

[6] The first such project stemmed from the fact that CSO was designed to interface with third party software that provided the "front end" to the customer in the linked operation of the two applications. Ms. Maithal referred to CSO as being the "brains" in such integrated applications, with CSO operating in integrated fashion with such front end applications such as MS Project and Oracle's Primavera P6.

[8] The second activity, reported as an actual SR&ED "project", was the Appellant's 2013 work in seeking to improve CSO by incorporating therein the "best lateness and overhead calculation" to enhance CSO's ability to calculate optimal timelines for the concurrent running of projects.

Field of Science/Technology:

Computer sciences (1.02.01)

Project Details:

Intended Results:	Develop new processes
Work locations:	Commercial Facility
Key Employees:	
Evidence types:	

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty

[3] Ms. Maithal does not have formal computer or software development training and had not been employed by the Appellant at any relevant time. Throughout 2013 and prior, her father Ravi Maithel, since deceased, was president of the Appellant. I understand that he had a background in computers. Ms. Maithal herself, while an astute and erudite witness, had no personal or direct knowledge of the Appellant's activities in 2013 relevant to this appeal.

[3] ... Her evidence essentially was derived from the content of two letters her late father had written in 2015 in exchanging correspondence with Canada Revenue Agency (CRA) SR&ED auditors - addressing at the audit stage the Appellant's SR&ED claims at issue herein. It was left unexplained why the Appellant did not call to testify any current or former employees of the Appellant who had had any significant involvement in the Appellant's activities in 2013 underlying this SR&ED claim

[4] Testifying for the Respondent was Dr. Mayank Pandey, a CRA employed research and technology advisor (RTA). He has a PhD in engineering management. He was the RTA who advised CRA respecting the subject SR&ED claims. He was accepted as an expert witness without objection from the Appellant. His expert report was filed as Ex. R-1. It pertains to the "second activity", referenced in paragraph 8 below.

[5] The Appellant sought SR&ED benefits from two activities it engaged in in 2013 in conjunction with its commercially successful software, CSO.

[7] ... in or about early 2013 Oracle updated its "application programming interface" (API) code for its new version of Primavera being Primavera P7. This change blocked CSO from integrating with Primavera P7, pending adaptations of CSO's code. While Oracle had published, for reference by software companies with products integrating with Primavera, an explanation of its API changes, that published explanation apparently was insufficiently comprehensive to permit the Appellant to readily ascertain required code changes for CSO.

The most significant underlying key variables are:

applying metaheuristics (unresolved), adding constraints (unresolved), UNDERSTAND 3RD PARTY API's - INELIGIBLE (unresolved)

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	10 Articles	Here is an example of a search for prior art pplying+metaheuristics)+(adding+constraints)+machine+learning
Suppliers	1 products	Insufficient documentation of Primavera & Oracle API updates for latest release

Activity #1-1: updates for Oracle (Fiscal Year 2020)

Methods of experimentation:

[13] Regarding the first of these two 2013 initiatives, being the API work, the Appellant in its written submissions asserted that, "this lack of documentation [for the new P7's API code] created scientific or technological uncertainties" saying further that this, "could not be overcome by using standard programming practice/brute force in solving the problem…"

[14] The Appellant submitted also that, the hypothesis generated was that the changes made to the API that affect [the Appellant's] integration could be determined if developers systematically tried various combinations of XML items [an aspect of API code] and added/removed different item fields to eliminate the errors, and warnings, generated when a partial XML file was used to update a project in Primavera 6. The knowledge gained from this systematic investigation improves our understanding of the new schema file and help[s] [the Appellant's] future integration work.

[15] The Respondent (CRA) submits that, "learning about third party products such as Primavera does not constitute a technological advancement." I disagree with this statement only insofar as it does not acknowledge that conceivably technological advancement might be found in the development, through scientific methodology and not standard processes or routine engineering, of some new process for ascertaining the unpublished content of the new P7 API code.

Results:

Conclusion:

The judge commented:

[16] Here, the Appellant's "hypothesis" as above cited is to, "systematically [try] various combinations of XML [an aspect of API code] and [add/remove] different item fields to eliminate the errors, and warnings, generated when a partial XML file [is] used to update a project in Primavera 6." But that does not seem a scientific proposition to be tested by scientific experimentation. Rather, it describes a methodology for seeking to ascertain the nature of the XML element of Primavera P7's API coding, i.e. seeking to acquire knowledge, already possessed by Oracle, of the latter's P7 API code. This proposed procedure, couched as an "hypothesis" - the systematic trying of various combinations of API coding factors - is redolent of a trial and error approach.

[17] In my view, trial and error procedure is routine engineering. In Northwest, "routine engineering" was said to mean, as stated above, "techniques, procedures that are generally available to competent professionals in the field." Certainly trial and

error is a known technique, available to competent professionals in the field. Moreover, there is no reasonable indication that the Appellant's proposed trial and error procedure would be only a minor aspect of, in the greater context, a genuine scientific methodology.

[18] Thus, I do not find here evidence sufficient to permit the conclusion that in dealing with the API issue, SR&ED was engaged in.

Activity #1-2: lateness & overhead calculation factors (Fiscal Year 2020)

Methods of experimentation:

[19] The second activity that the Appellant put forward for SR&ED consideration was the Appellant's 2013 work seeking to incorporate the "best lateness and overhead calculation" to enhance CSO's ability to calculate optimal timelines for concurrently run projects. As explained in the Appellant's written submissions, in 2013, we saw that at times in the optimized schedule that [CSO produced], some projects were significantly delayed while other projects were on time, and at times a given project's total duration was often unnecessarily expanded. Our initial analysis showed that this was due to lateness cost rate setting and lack of project duration control. The investigation into possible solutions to overcome [an] undesirable optimized schedule resulted [sic] based on project lateness and overhead looked at implementing various types of cost calculations to the calculation engine or implementing overhead analysis costing.

[20] The Appellant in its written submissions stated that it had proposed five courses of conduct, described by the Appellant in its submissions as "hypotheses". They were,
1. Lateness - use a lateness cost interest to the lateness cost calculation;
2. Lateness - use a compound lateness cost interest to the lateness cost calculation;
3. Minimize fragmentation - use a standardized project overhead cost;
4. Minimize fragmentation - implement a critical path analysis to find the reason from duration point of view;
5. Minimize fragmentation - implement bottleneck resource analysis to find the reason from resource point of view.

[21] The Appellant further submitted that the first three of these five "potential solutions" were tested using multiple datasets for different test cases including, "composite resource only" dataset, "discrete resource only" dataset and "mixed resources" dataset, plus three dataset sizes - large (greater than 5,000 activities), small (less than 1,000 activities) and medium. The Appellant submitted that it concluded from these tests that incorporation of a compound lateness cost and standard overhead cost produced optimal scheduling results best emulating a human decision.

Results:

22] The Respondent's written submissions, reflective of Dr. Pandey's expert report and opinion evidence, was that here there was no technological uncertainty - as the Appellant had used an established methodology termed "metaheuristics" to resolve the lateness and overhead costs matter. Dr. Pandey in his expert report (Ex. R-1) states that, [a] known way to solve [scheduling problems including involving the addition of each new variable] is to use metaheuristics, which in essence search the solution space based on some algorithms and converge to a solution. There are multiple known ways of using metaheuristics to solve schedule optimization problems. [The Appellant] had already been using such metaheuristics in the existing application for solving schedule/cost optimization problems.

[23] Further,[Dr. Zhou of the Appellant at a meeting dated October 29, 2014 with Canada Revenue Agency officials and others]...explained that new constraints were required to be added in the existing problem to overcome the deficiencies in the existing organizer. However, adding new constraints itself does not represent any scientific or technological uncertainties. It is known that any new constraints to an existing optimizing problem may necessitate adding new heuristics (set of rules) to the existing setup (rule-base) so that the solution space, bounded by constraints, could be explored by a metaheuristics and a final solution could be obtained. The solutions can be further refined using various numerical techniques via iterative simulation.

[24] And finally, the information and supporting evidence provided do not establish that [the Appellant] encountered any scientific or technological uncertainties in either modeling the problem, using the existing metaheuristics in solving the problem at hand or devising/adding new heuristics. At the outset of the claimed work, [the Appellant] was using [a] metaheuristics based solution approach...and they had a stable schedule engine to generate a schedule satisfying all defined constraints and scheduling rules....While the new constraints (adding the lateness cost and overhead cost in a multi-project optimization scenario) added further complexity to the scheduling problem, the facts presented for review do not show that these two constraints/requirements created any [scientific or technological uncertainty] for [the Appellant]. The company had the necessary expertise in applying metaheuristics and adding constraints in schedule/cost optimization problems in a multi-project scenario. Furthermore, the formation and supporting evidence provided for review do not establish that any scientific or technological uncertainties were encountered/addressed at the system level with respect to how the addition of the new constraints would have created uncertainties on the existing technologies/components. As such, while the work was complex and time consuming, requiring algorithm refining, coding and testing to obtain an acceptable solution, the work did not involve experimentation or analyses to resolve scientific or technological unknowns per subsection 248(1) of the Act... [emphasis added]

Conclusion:

The judge stated:

> [25] I accept the expert evidence of the Respondent as expressed above. The Appellant through its sole witness, a non-expert and untrained in computer science, did not present evidence at all sufficient to persuade me that the Respondent's evidence was in error. And I note again that the Appellant called no witnesses with any direct knowledge of the work of the Appellant had done in 2013 (nor explained why it did or could not do so). Nor did the Appellant seek to qualify an expert to testify in response to Dr. Pandey's evidence. Thus, as with the API activity, for this second activity concerning lateness and overhead factors, I deny the claimed SR&ED tax credits.

Project Name:	Kam Press Metal - custom structure (LOSS W COSTS)	**Start Date:**	2020-01-31
Project Number:	2002	**Completion Date:**	2020-02-29

Project Details:

Scientific or Technological Objectives:

This project is based on the Tax Court of Canada judgment for KAM-PRESS METAL PRODUCTS LTD.v. HER MAJESTY THE QUEEN (CITATION: 2019 TCC 246).

[4] Three witnesses testified for the Appellant: Mr. Michael Bobee (“MB”), the founder and the president and general manager of the Appellant; Mr. Chad Bobee (“CB”), the sales and engineering manager of the Appellant and the son of MB; and Mr. Michael Witen, an independent SR&ED consultant to the Appellant prior to and during the taxation years in issue. [5] MB provided a brief overview of the history and business of the Appellant.

The Appellant was established in 1973 by MB and has carried on the business of custom manufacturing since its inception. The Appellant works primarily with metal but occasionally works with other materials as the need arises. One product custom-manufactured by the Appellant is referred to as a memorial niche, which is used to display funeral urns. The memorial niches custom-manufactured by the Appellant are typically made of metal with a glass front.

[6] Prior to the commencement of the Project, the Appellant was approached by a distributor of its custom-manufactured products who wanted to discuss the manufacture of a memorial niche for a church in Alberta. The architect for the church envisioned a memorial niche with a complex design involving both curved and straight sections that would give the effect that the urns were floating in space.
The latter aesthetic required the memorial niche to be as transparent as possible with lighting that supported the desired effect.

Field of Science/Technology:

Mechanical engineering (2.03.01)

Project Details:

Intended Results:	Develop new materials, devices, or products
Work locations:	Commercial Facility
Key Employees:	
Evidence types:	

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty

[9] The Appellant considered three possible designs. The first design used the traditional materials of metal and glass to construct the memorial niche columns. This design proved too difficult and costly to manufacture.
[10] The second design replaced the metal with tempered glass. This design resulted in a memorial niche column that was heavy and expensive and the components of which would be difficult to ship without breakage and to assemble without weakening the structural integrity of the niche.
[11] The third and final design envisioned a memorial niche constructed of acrylic. The Appellant reviewed various samples of acrylic and concluded that it needed to use high-grade high-strength extruded acrylic. The Appellant acquired the acrylic from a third-party manufacturer of acrylic.

AUTHOR'S NOTE: THE APPELLANT DID NOT PROVIDE EVIDENCE OF RESEARCH ON "READILY AVAILABLE" TECHNIQUES.

The most significant underlying key variables are:

PROBLEM: marketing vs. technology issues? (unresolved)

Technology or Knowledge Base Level:

Activity #1-1: development (Fiscal Year 2020)

Project Name:	Kam Press Metal - custom structure (LOSS W COSTS)	**Start Date:**	2020-01-31
Project Number:	2002	**Completion Date:**	2020-02-29

Methods of experimentation:

Method	Experimentation Performed
Analysis / simulation:	25 alternatives
Trials:	15 runs / samples
Physical prototypes:	2 samples

[13] One issue was the creation of columns of niches that could be combined into the desired arc of columns. The Appellant used 3D computer-aided design software to model the columns. The result of the modelling was then tested using a mock-up built on the factory floor. An important aspect of the design was that the tolerances had to be tight so that the niche columns would line up properly when
combined in an arc.
[14] A second issue was the design of a base for the columns that would support the columns while replicating the arc of the columns. Again, the Appellant used 3D computer-aided design software to identify configurations for the base. The first design was discarded because of its cost. The second design was adopted and several base plates were manufactured and tested using different means to connect
the base plates. The Appellant encountered issues securing the niche column into the baseplate, which it overcame by designing a custom mount attached to the baseplate.
[15] A third issue was the design and manufacture of a traditional extruded and anodized aluminum front beam system for the niche columns. The beams had to interconnect and provide a housing for parts such as the LED light valance. The Appellant encountered issues with regard to such things as the correct position of mounting holes in the acrylic, the manner of cutting horizontal top beams for arced
columns so that they could be joined, and the means of securing corner joint and Tjoint rosette cover plates. The Appellant was able to resolve these issues by trying different spacing for the mounting holes, using a straight cut for all horizontal top beams and trying different means of securing the cover plates.
[16] A fourth issue was the reflectivity of the acrylic panels used in the columns. The Appellant tried different sanding techniques to dull the surface of the acrylic. After that failed to achieve the desired result, the Appellant purchased prefinished panels that addressed the issue.
[17] A fifth issue was the design of a jig to hold the acrylic pieces together during assembly of the columns. After considering and rejecting a two-jig system (one for arced columns and one for non-arced columns), the Appellant designed and constructed a single versatile jig for all columns. The jig was designed to be very robust so that there would be no shifting or flexing during the gluing process and
so that the appropriate pressure would be applied to the joints during the gluing process. The Appellant tested different configurations and structural components before achieving the desired level of rigidity and pressure.
[18] A sixth issue was the cutting of the acrylic sheets and the gluing together of the acrylic shapes in a way that was structurally sound and satisfied the aesthetic requirements of the architect (i.e., maximum transparency). Initial trials using laser-cut acrylic shapes proved unsuccessful because the cut surfaces were not flat, so the Appellant moved to machine-cut acrylic shapes instead. The Appellant encountered difficulty gluing the shapes together in a structurally sound way while maintaining the desired aesthetic. After attempting solutions such as routed grooves in the backplate to allow for proper seating and gluing of the shelves and dividers for assembly with the outer acrylic column pieces, the Appellant determined that it could not solve the assembly issues and outsourced the assembly
of the columns to an acrylic item manufacturing

Results:

THE JUDGE COMMENTED:
[24] Neither party presented an expert witness. In my view, the evidence of an expert witness is not necessarily required to resolve the question of whether an activity is SR&ED.

Conclusion:

THE JUDGE RULED (LOSS + COSTS):
[25] In this case, I do not require the technical assistance of an expert witness to conclude that the activities of the Appellant in furtherance of the Project are not SR&ED. The Appellant was faced with several technical difficulties in the design and construction of the acrylic memorial niche columns, some of which it was able to solve through computer-aided design exercises and trial and error.
[26] The resolution of those issues that were resolved involved the application of standard procedures or routine engineering such as variations in the design of components, in the approaches to the assembly of components and in the materials used to construct components. In my view, the Appellant did not resolve or attempt to resolve any technological uncertainty.
[27] The issues identified and addressed by the Appellant were routine technical issues associated with the design and construction of an existing product using different materials. As stated by Judge Bowman in Northwest Hydraulic, the fact that there may have been some doubt as to the way in which the technical issues would be resolved does not amount to the existence of technological uncertainty.
[28] The Appellant attempted, but was not able, to resolve the problem of how to assemble the niche columns and it

subcontracted that work to an acrylic item manufacturing company. In the absence of evidence to the contrary, I can only infer from this that that company had the experience and expertise to perform the required assembly, which suggests to me that the issues faced by the Appellant in designing and constructing the acrylic memorial niches resulted from a lack of experience and expertise in working with acrylic and not from any technological uncertainty associated with the design and construction of the memorial niches.

[29] I also find that the approach of the Appellant to resolving the issues raised by the Project was one of trial and error. Adopting the words of Judge Bowman, I conclude that the Appellant has not demonstrated that the procedures adopted for the Project accord with established and objective principles of scientific method, characterized by trained and systematic observation, measurement and experiment, and the formulation, testing and modification of hypotheses. This is reflected in the-fact-that-there-is-a-complete-absence-of-documentation-save-for-the-after-the-fact-summaries-prepared-by-the-Appellant's-
SR&ED consultant.

[30] For the foregoing reasons, the appeals are dismissed, with costs to the Respondent in accordance with the Tariff.

AUTHOR'S NOTE: IT IS UNCOMMON FOR THE JUDGES TO CHARGE COSTS TO THE LOSERS OF SR&ED RELATED CASES UNLESS THEY BELIEVED THE CASE WAS FRIVOLOUS.

Significant variables addressed: PROBLEM: marketing vs. technology issues?

Project Name:	CRL Engineering - distributed computing (WIN)	**Start Date:**	2020-02-10
Project Number:	2003	**Completion Date:**	2020-08-31

Project Details:

Scientific or Technological Objectives:

This project is based on the Tax Court of Canada judgment for CRL Engineering Ltd. v. The Queen (2019 TCC 65).

[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.

Field of Science/Technology:

Computer sciences (1.02.01)

Project Details:

Intended Results:	Improve existing processes
Work locations:	Research Facility
Key Employees:	Dr. Raman Paranjape (Electrical Engineering - PhD (1985) / CEO)
Evidence types:	Records of resources allocated to the project, time sheets; Samples, prototypes, scrap or other artefacts; Design, system architecture and source code

Scientific or Technological Advancement:

Uncertainty #1: Technological 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 (CRA) 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".

[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.

Technology or Knowledge Base Level:

Activity #1-1: Development (Fiscal Year 2020)

Methods of experimentation:

[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.

Results:

Were detailed records kept as the work progressed? THE JUDGE COMMENTED:

[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.

Conclusion:

[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”.

AS A RESULT THE JUDGE RULED:

[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.

Documentation:

- Offline Documents: weekly system snapshots

Project Name:	Exxon - drilling evidence for SRED (LOSS)	**Start Date:**	2020-03-01
Project Number:	2004	**Completion Date:**	2020-10-29

Project Details:

Scientific or Technological Objectives:

This project is based on the Tax Court of Canada judgment for EXXONMOBIL CANADA LTD. & EXXONMOBIL CANADA HIBERNIA COMPANY LTD. v. HER MAJESTY THE QUEEN (2019 TCC 108).

One of the issues in this case involved 2) the reassessment of EMCHCL to deny EMCHCL's claim that its share of the expenditure incurred in 2005 to drill well B16-54 qualified as an expenditure for "scientific research and experimental development" as defined in subsection 248(1) of the ITA (the "SR&ED Claim").

[57] During 2005, well B16-54 was drilled to a depth of 4,600 metres, at which point the drill bit "torqued off" the bottom of the well and was lost. The principal issue is whether EMCHCL's share of the cost of drilling the B16-54 well in 2005 qualifies as a scientific research and experimental development expenditure. The PSAF states that the cost of drilling well B16-54 in 2005 was $40,964,305 and that EMCHCL's share of that cost was $2,048,215.

Field of Science/Technology:

Environmental and geological engineering (2.07.01)

Project Details:

Intended Results: Improve existing processes
Work locations: Lab
Key Employees:
Evidence types:

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty

[60] The Appellant (EXXON) submits that the drilling of the B16-54 well was SR&ED because it provided experimental validation of the predictions made using the new/improved RCA methodology developed by Upstream Research Company.

[61] The Respondent (CRA) submits that the drilling of well B16-54 was to delineate the oilfield in the Hibernia southern extension and to satisfy the requirements of EL1093 and that paragraph (h) of the definition of SR&ED excludes drilling for petroleum, which is consistent with the fact that the cost of oil wells is addressed in the definitions of "Canadian exploration expense" ("CEE") and "Canadian development expense" ("CDE") in subsections 66.1(6) and 66.2(5) respectively of the ITA.

Technology or Knowledge Base Level:

Activity #1-1: Activity 1 (Fiscal Year 2019)

This Activity is addressed in Fiscal Year 2019.

Activity #1-1: development (Fiscal Year 2020)

Methods of experimentation:

[62] To support its position, the Appellant submitted the expert reports of Doctor Fairchild and to support her position the Respondent submitted the expert reports of Professor Gringarten.

REGARDING THIS EVIDENCE THE JUDGE COMMENTED:

While these reports provide some interesting technical background, they provide limited assistance with respect to the issue of whether the drilling of well B16-54 constitutes SR&ED.

[64] Having said this, I find that two observations by Professor Gringarten provide useful background to the issue under appeal:

. . . In any case, the validation of a reservoir model cannot rely on a single well but comes from the accumulation of proofs from a series of wells. [46]

. . .

All wells are drilled based on reservoir characterization and reservoir connectivity studies and in turn all wells, from wildcat to appraisal to delineation to development, contribute knowledge that is used to improve the reservoir model and reduce uncertainty. [47]

[65] The primary objectives, incentives and issues in respect of the B16-54 well are described in the presentation to management dated June 16, 2005 as follows:

PRIMARY OBJECTIVES

- Define OWC in Hibernia South by penetrating primary reservoir targets of Layers 2 and 3 between 4500-4800 m (14764-15748 ft) TVDss - tests deepest possible contact.

- De-risk sufficient volumes to determine economic viability of platform facility upgrades and/or an 11 well subsea water injection development.

- Obtain core and fluid samples to characterize reservoir properties with depth to optimize future developments.

INCENTIVES

- The incremental risked STOOIP capture of NFW MM1 is 170 MB in up to 6 fault blocks.

- The risked unit development cost of the Hibernia South development is C$4-5/B.

- Fulfills EL 1093 commitment of C$8 M.

ISSUES

- Depth of OWC in Hibernia South is currently unknown but NFW MM1 will test interval of 4500-4800 m (14764-15748ft) TVDss. RCA and data from MM NFW derisks Hibernia South explicitly.

- Magnitude of potential reservoir quality (permeability and porosity) degradation with depth will be better understood through log and core acquisition. [48]

[66] The e-mail from Mark P. Evans found at Tab 47 of the JBD confirms the reasons for the drilling of the B16-54 well, which was to facilitate and accelerate the development of the Hibernia southern extension, in furtherance of which EL1093 had been obtained on January 15, 2005 (i.e., before the new/improved RCA methodology had been developed).

Results:

THE JUDGE STATED:

[67] The fact that the limited data provided by the B16-54 well, or more accurately sidetrack W, supported the prediction made using the new/improved RCA methodology is not proof that the well was a component of the SR&ED performed to create/improve that methodology. The fact that the path of well B16-54 was chosen to obtain the greatest amount of data at the least cost is also not proof that the well was a component of the SR&ED performed to create/improve the RCA methodology. Both facts are also consistent with the drilling of well B16-54 to facilitate and accelerate the development of the Hibernia southern extension, as stated in the documents at Tabs 42 and 47 of the JBD.

Conclusion:

JUDGE'S RULING & RATIONALE: LOSS

[68] The new/improved RCA methodology predicted the existence of significant amounts of oil in the Hibernia southern extension. Any well drilled in the southern extension subsequent to this prediction could potentially contribute data relevant to assessing the veracity of the prediction. However, common sense and commercial reality dictate that the primary purpose of any such well (even the first one) is not to validate the RCA methodology but rather to obtain data regarding oil in the southern extension. In this case, I find as a fact that well B16-54 was drilled to obtain data regarding oil in the southern extension and to satisfy the requirements of EL1093. The validation of the RCA methodology was incidental to these objectives. This conclusion is consistent with the fact that there was no evidence to tie well B16-54 to the formulation, testing and modification of the RCA methodology.

[69] The drilling of a conventional well, based on the predicted location of oil, to establish whether and to what extent oil is present may be distinguished from the construction of a pilot plant to test a new or improved process or technology. The latter contributes to the resolution of technological uncertainty associated with the construction of a full scale plant while the former incidentally provides data that either agrees with or disagrees with the outcome predicted by the model.

AUTHOR'S COMMENT:

THIS CASE PROVIDES AN EXAMPLE OF THE MINIMUM REQUIRED DEGREE OF DOCUMENTATION REQUIRED. IN THIS CASE THE CLAIMANT DID NOT BENCHMARK VS. EXISTING MODELS. TO SIMILAR WORK IN THE LANDMARK CASES OF NORTHWEST HYDRAULIC CONSULTANTS & RAINBOW PIPELINE WHERE THE CLAIMANTS WERE SUCCESSFUL IN DEMONSTRATING ACCEPTED TECHNOLOGICAL LIMITS & RELATED ADVANCEMENTS IN THEIR FIELDS OF ENGINEERING.

HAD THE CLIENT BEEN ABLE TO PRODUCE RELATED EVIDENCE OF TECHNOLOGICAL ADVANCEMENT THE FACT THAT THE DATA COULD ALSO HAVE COMMERCIAL VALUE/USE SHOULD NOT HAVE NEGATED THE ELIGIBILITY.

Project Details:

Scientific or Technological Objectives:

The case examined 14 specific projects over a period of 3 taxation years. Ultimately 6 of these projects were found to be eligible

[71] Exhibit AI-1, which is a table detailing the expenses incurred in respect of each project.

[415] [THE JUDGE] I conclude that the activities carried out by BMQ in the context of projects B 10 18, B 11 04, B 11 07, B 12 01, B 12 03 and B 12 07 are SR&ED activities.

7) Project B-10-18: Develop a light self-compacting mortar for mobile concrete mixer
9) Project B-11-04: Analysis of the influence of binders and additives on the performance of self-placing concrete
10) Project B-11-07: Developing an ultra-fast setting mortar for installation in a marine environment
11) Project B-12-01: Development of fast-setting latex-free concrete
13) Project B-12-03: Development of quick-setting latex concrete screed
14) Project B-12-07: Development of repair product for roller compacted concrete

Field of Science/Technology:

Civil Engineering (2.01.01)

Project Details:

Intended Results:
Work locations:
Key Employees:
Evidence types:

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty

Technology or Knowledge Base Level:

Activity #1-1: Activity 1 (Fiscal Year 2020)

Methods of experimentation:

The case involved examination of 14 separate projects. 6 were deemed eligible & 8 ineligible.

We will examine the successful projects independently in projects 2011-2017.

Results:

Conclusion: