Management's Discussion and Analysis – Quarterly Highlights

For the three and six months ended June 30, 2022

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MANAGEMENT'S DISCUSSION AND ANALYSIS THREE AND SIX MONTHS ENDED JUNE 30, 2022

The following Management Discussion and Analysis ("MD&A") of the financial condition and results of operations of dynaCERT Inc. ("dynaCERT" or the "Company") was prepared by management as at August 12, 2022 and was reviewed and approved by the Audit Committee. The following discussion of performance, financial condition and future prospects should be read in conjunction with the unaudited condensed consolidated interim financial statements of dynaCERT Inc. and notes thereto for three and six months ended June 30, 2022. The information provided herein supplements but does not form part of the financial statements. All amounts are stated in Canadian dollars unless otherwise indicated. Additional information related to the Company is available for view on SEDAR at www.sedar.com.

CAUTION REGARDING FORWARD LOOKING STATEMENTS

Certain statements contained in this document constitute forward-looking statements. When used in this document, the words "may", "would", "could", "will", "intend", "plan", "propose", "anticipate", and "believe", used by any of the Company's management, are intended to identify forward-looking statements. Such statements reflect the Company's forecasts, estimates and expectations, as they relate to the Company's views with respect to future events and are subject to certain risks, uncertainties, and assumptions. Many factors could cause the Company's performance or achievements to be materially different from any future results, performance or achievements that may be expressed or implied by such forward-looking statements. Given these risks and uncertainties, readers are cautioned not to place undue reliance on such forward-looking statements. The Company does not intend and does not assume any obligation, to update any such factors or to publicly announce the result of any revisions to any of the forward-looking statements contained herein to reflect future results, events, or developments.

NATURE OF BUSINESS

dynaCERT Inc. is domiciled in Canada with its registered and head office at 501 Alliance Avenue, Suite 101, Toronto Ontario, M6N 2J1. The Company is listed on the Toronto Stock Exchange (DYA), the Börse Frankfurt (DMJ) and the OTCQX (DYFSF).

dynaCERT is a growing cleantech sector Company that specializes in delivering Carbon Emission Reduction Technologies to the global diesel engine marketplace. Throughout *dyna*CERT's years in business, the Company has worked to provide a reliable and effective electrolysis unit that can generate hydrogen and oxygen on demand to: (a) address the growing requirements to reduce toxic emissions; and (b) address the desire to provide lower operating costs including an increase in fuel economy.

The Company is engaged in the design, engineering, manufacturing, testing, and distribution of a transportable hydrogen generator aftermarket product, currently in use in the heavy Class 6-8 tractor trailer industry, the smaller Class 2-5 trucks, stationary power generation, off-road construction machinery, and mining, and targeted for use in refrigerated trailers and containers, and forestry industries, with potential for application in the ocean shipping and trans-continental rail industries.

The system is a patented and patent-pending retrofit product that is designed to provide performance enhancements by introducing hydrogen and oxygen into the air intake manifold resulting in greater fuel efficiency and reduced carbon emissions.

Impact of Covid-19

The rapid spread of the COVID-19 virus worldwide has caused significant economic contraction and uncertainty, resulting in the Company not being able to produce product and thereafter to be able to ship product to its customers for an extended period of time. While the Company resumed operations on August 4, 2020, the worldwide pandemic starting in late 2019 slowed down parts of the Company's supply chain, thereby stopping all final assembly work on existing client orders until raw material deliveries resumed and were received towards the end of March 2020. Further, European shut down of non-essential commerce from January through August 2020 significantly affected the Company's ability to deliver finished goods as customers were not able to accept incoming goods or install HydraGEN™ technology units on their trucks and equipment. Further sales efforts were also curtailed with potential dealers and their customers all affected by the Stay-at-Home orders put in place in countries where the Company does business. Although the Ontario pandemic response was a few weeks behind the early stages of European experiences, in Ontario, the government mandated that all non-essential work be stopped, and employees be sent home on March 16, 2020 and the Company fully complied. While *dyna*CERT was able to have a few materials-team members intermittently on hand for the receiving of the remaining raw materials that were in transit from the supply chain, all long-term deliveries to *dynaCERT* were put on hold. The Ontario Government has released certain qualifying companies and services to re-open in a Staged process. On Wednesday, July 28, 2020, the Ontario Government released companies in the Greater Toronto Area (GTA) to begin work at midnight on July 31, 2020. *dynaCERT* recalled employees for Tuesday, August 4, 2020 after the statutory holiday and has been operational since this re-opening date.

In anticipation of a release from the government to restart and return to work, the Company had implemented COVID-centric policies and a daily acknowledgement to keep our employees safe as we worked together to re-commence shipping HydraGEN™ units to our customers for example:

1. Policy 817: statement outlining the daily activities every employee must adhere to regarding proper Personal Protection Equipment (PPE) and workspace distancing.
2. Policy 818 : guidelines and instruction on the proper use of PPE equipment
3. Policy 819 : guidelines on reporting illness while at work
4. Policy 820 : guidelines on maintaining sanitized workspace and equipment
5. Acknowledgement : daily record keeping of employees entering the facility and their health status.

These policies were lifted by the Ontario Government on March 21, 2022 and restrictions on most public places were removed, except for public transit and health care settings. As of April 27, 2022, all COVID restrictions have been lifted; the Company is closely monitoring and following the guidelines from local public health officials.

The COVID-19 pandemic has continued to rapidly evolve and fluctuate throughout 2021 and 2022, and the Company will continue to monitor the effects of COVID-19 on its business in Canada and around the world. The extent to which COVID-19 may impact *dynaCERT's* business will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the emergence of variants of concern, the geographic spread of the disease, the duration and degree of future waves of infection, business closures or business disruptions, public health restrictions on travel and in-person interactions, and the effectiveness of actions to contain and treat the disease in Canada, the United States, Mexico, Europe, South America, the Middle East and India, and other markets where the Company may seek to offer its products. The Company cannot presently predict with accuracy the duration, scope, and severity of any potential business closures or disruptions, or the overall effects of COVID-19 on its business over time. Though many shutdowns and restrictions have been lifted and businesses have re-opened in many parts of the world, future shutdowns or other business interruptions could result in material and negative effects on the Company's ability to conduct its business in the manner and on the timelines presently planned, which could have a material adverse impact on the Company's business, results of operation, and financial condition.

***dynaCERT* Facilities and Dealers**

The Company operates in many jurisdictions around the world with owned facilities in Canada and through agents and dealers in Canada and internationally. The Company's headquarters are located in Toronto, Canada where accounting, sales, engineering, R&D, manufacturing, and distribution operate. The Company, through its *dynaCERT* GmbH division, has an office and warehouse in Germany where it provides sales, engineering support, parts warehouse and quick-delivery services to its European clients of the HydraGEN™ family of products. In September 2021, *dynaCERT* GmbH moved to a new facility in Upper Bavaria.

With now 47 qualified agents and dealers operating in over 38 countries worldwide, the *dynaCERT* HydraGEN™ line of products is ready to be presented to a market potential of more than 100,000,000 vehicles.

In 2021 and 2022, the Company signed the following new Dealers in the respective jurisdictions outlined below:

- ZÜKO AG, Switzerland & Fürstentum Lichtenstein
- 6TAVADA LDA, Portugal
- SSiE, Canada
- ESAMETAL S.r.l., Italy
- SIMMAX Power Generation, Canada
- Simply Green Ltd, Canada

- 6TAVADA Iberica SL, Spain
- GridFix, Australia
- ACR Industrial Supplies, Colombia and Peru

Alltrucks GmbH & Co. AG, of Germany ("Alltrucks"), although restricted in 2021 due to the current COVID-19 pandemic, has initiated promoting *dynaCERT's* HydraGEN™ technology to 300 of Alltrucks partner establishments in Germany with support and training for the Alltrucks partners provided thru the *dynaCERT* GmbH team.

KarbonKleen

On May 9, 2020, KarbonKleen Inc. ("KK" or "KarbonKleen") provided the Company with a purchase order for 3,000 HydraGEN™ technology units as part of its monthly subscription programme.

In Q1 2021, *dynaCERT* received purchase orders with advanced payment for twenty (20) of the Company's newest 2021 model HG1R units for the North American continental trucking customers of KarbonKleen which is furthering its successful trials to its trucking and logistics clients. This is not part of the subscription programme for 3,000 units noted above.

In November 2021, the Company announced the implementation of its flagship HydraGEN™ Technology and its telematics HydraLytica™ Technology by Sofina Foods Inc. ("Sofina") in Canada.

KarbonKleen has informed the Company that Sofina will expand their installation of *dynaCERT's* Technology from four (4) HydraGEN™ Technology units to twenty (20) units, with a goal of using *dynaCERT's* patented technology to improve the efficiency and reduce harmful emissions of diesel-powered engines. With Sofina's installation of a combined twenty (20) of *dynaCERT's* HG1 HydraGEN™ units, KarbonKleen will be featuring HydraLytica™ (*dynaCERT's* proprietary global software telematics technology) to its client.

Sofina has installed units as part of its ongoing commitment to continuously improving the environmental impact of its operations and products. Sofina is well known for working with its customers and suppliers to find opportunities to minimize the environmental impact of their operations. Working with KarbonKleen to use *dynaCERT's* Technology is in alignment with those principals.

KarbonKleen has also indicated that although the relentless COVID-19 economic slowdown has affected the initial deployment by KarbonKleen of its 3,000 HydraGEN™ unit commitment, KarbonKleen continues to offer attractive financing options to its clients under KarbonKleen's unique leasing programme. To date, KarbonKleen has received from *dynaCERT's* wholly-owned subsidiary, DynaCERT International Strategic Holdings Inc. ("DISH"), 12 units under the leasing programme and has purchased a total of 191 units. No additional units were delivered during the three and six months ended June 30, 2022.

For a discussion regarding certain accounting treatments of the foregoing transactions, see "Loss on loans, investments, and prepayments" regarding the impairment of KarbonKleen investment and loan.

Galaxy Power Inc.

In June 2021, the Company agreed with Galaxy Power Inc. ("Galaxy Power"), a newly-formed Canadian private corporation, to advise Galaxy Power, from time to time, on general innovative Hydrogen Clean Technology advancements throughout Canada. *dynaCERT's* Hydrogen-On-Demand solutions, existing proprietary technology, patents, know-how, and all future *dynaCERT* projects remain as *dynaCERT's* continued and exclusive focus outside the scope of Galaxy Power and are not affected in any way by this association. Galaxy Power is controlled by two directors and officers of the Company.

Galaxy Power is a newly formed single purpose entity set up exclusively for the purposes of advancing a pollution-free North America, focusing specifically on new Canadian Clean Technology developments and other forms of Clean Technology and related green fuels, unrelated to *dynaCERT'*s HydraGEN™ Technology, with the mission of "Generating Ideals for Ideal Generations".

Galaxy Power's strategic corporate objectives are aimed at furthering a new Canadian hub of Clean Technology expertise in support of Canada's Clean Technology Industry and fostering efforts in lobbying for the growth of Canada's numerous and fast-growing Clean Technology enterprises especially through the rapid expansion of Canadian Government incentives as they apply to Clean Technology.

Galaxy Power has expressed its intention to continue to develop, in a non-dilutive way to *dynaCERT*, its collaborative know-how and to deploy such knowledge to eventually possibly seed or participate in future advancements in the numerous businesses of the Hydrogen Economy. In consideration of the collaboration of *dynaCERT's* support and industry know-how, DISH invested $250,000 to acquire 20% of Galaxy Power's equity, thereby enabling *dynaCERT* and DISH to benefit and participate in the possible growth and eventual commercialization of new originations of Canadian proprietary Clean Technology with no future commitments by *dynaCERT* nor DISH.

The Company has accounted for the investment in accordance with IFRS 9, as the Company does not have significant influence over the investment.

For a discussion regarding certain accounting treatments of the foregoing transactions, see "Loss on loans, investments, and prepayments" regarding the loss on investment in Galaxy Power.

dynaCERT and Galaxy Power applaud the recently announced changes proposed in the Canadian Government's Budget of April 7, 2022 ("Budget 2022") regarding the creation of a 30% new tax credit for investments in Clean Technology focused on net-zero technologies, battery storage, and clean hydrogen. The new 30% Critical Mineral Exploration Tax Credit and certain other provisions relating to expanding Clean Technology tax incentives associated with flow-through shares, including the expansion of Class 43.1 and 43.2 Canadian Renewal and Conservation Expense ("CRCE") tax definitions, and certain new deductions (collectively the "Clean Tech Incentives").

dynaCERT and Galaxy Power and their principals have been meeting for more than two (2) years with cabinet ministers, elected Members of Parliament, and senior officials within the government to advance, and assist with, the implementation of Clean Technology tax deferrals and tax credits. *dynaCERT* and Galaxy Power have had face-to-face meetings, conversations, and correspondence with political parties on all sides to help bring Clean Technology tax incentives to fruition.

Budget 2022, and its corresponding proposals for Clean Tech Incentives, were endorsed by The Right Honourable Justin Trudeau, Canada's Prime Minister and leader of the Liberal Party of Canada, The Honourable Chrystia Freeland, Canada's Deputy Prime Minister and Minister of Finance, The Honourable Steven Guilbeault, Environment and Climate Change Minister, and The Honourable Omar Alghabra, Minister of Transport, among many other dignitaries.

Accordingly, Galaxy Power and *dynaCERT* welcomes the Clean Tech Incentives as lasting strong evidence of an obvious, clear, irrefutable, and unequivocal "foreseeable future economic benefit" for all Canadians and to Canadian participants such as *dynaCERT* and Galaxy Power.

dynaCERT and Galaxy Power continue to support the government's openness in a consultative process on the design details of the tax matters in Clean Technology and see consultative measures as a rational and important step to continue to expand Clean Technology Flow-Through Shares.

A flow-through share is a type of common share that permits the initial purchaser to claim a tax deduction approximately equal to the amount invested, thereby enhancing financing options for companies that make use of such incentives. According to the Prospectors and Developers Association of Canada (PDAC), Flow-through share financing contributes over 65% of the funds raised on Canadian stock exchanges for exploration across the country, generating significant exploration activity within Canadian borders.

Sparta Group

In August 2020, the Company signed a dealer agreement with Sparta Group's affiliate, TruckSuite Canada Ltd., and received a corresponding purchase order for the Company's HydraGEN technology products with a first commitment for 150 HG1 units. As has been the case with other purchase orders, fulfillment of this order has been delayed, largely due to the COVID-19 pandemic. As Sparta's clientele is primarily in the US, border restrictions have largely prevented this purchase order from being completed. The Company has remained in contact with Sparta management and Sparta management has confirmed their expectation that this purchase order would be fulfilled. Of the 150 unit purchase order, Sparta has taken delivery of 10 units under this order to date. With the US border now open to cross-border traffic, the Company and Sparta Group are now discussing the estimated timeline for delivery.

dynaCERT International Strategic Holdings Inc.

The Company has established a 100%-owned subsidiary called *dynaCERT* International Strategic Holdings Inc. ("DISH") to be used to support efforts worldwide with investments in strategically unique and exceptional CleanTech innovators directly related to *dynaCERT's* business, including a subscription programme of *dynaCERT's* HydraGEN™ technology to enhance end-user adoption.

In a series of related transactions with KK, DISH has agreed to provide KK with HydraGEN™ technology units until December 31, 2021 in return for subscription revenue whereby KK continued to offer on a back-to-back basis a subscription programme to outfit large Canadian and USA trucking fleets with HydraGEN™ technology.

As its first investment, DISH invested $516,479 ($367,000 USD) in KK in a transaction whereby the Company owns, indirectly through DISH, twenty percent (20%) of KK, and $1,020,293 ($725,000 USD) by way of a Promissory Note from KK due December 31, 2021, bearing interest of 10% per annum. The purpose of this investment by DISH is to accelerate its market penetration and sales in the USA market which both *dynaCERT* and KK have determined is a growing priority in North America.

Although KK continued to show losses during the three and six months ended June 30, 2022, the Company did not record any losses in its unaudited condensed consolidated interim statements of loss and comprehensive loss as the investment in KK was fully impaired during the year ended December 31, 2021. See "Loss on loans, investments, and prepayments" regarding the impairment of KarbonKleen investment and loan.

On December 1, 2021, the Company's directors resigned as directors of KarbonKleen. The Company still retains its rights under the shareholders' agreement with KarbonKleen.

United Nations Smart Sustainable Cities

In August 2020, the Company received the Smart Sustainable Company Rating Seal based on the results of the rigorous analysis of Triple-A Analytics GmbH of Austria ("Triple-A"). This honourable distinction of *dynaCERT* and its HydraGEN™ technology as it applies to the United Nations Sustainable Development Goals and the United Nations Global Compact Principals has been evaluated as "high", the highest global ranking in its category.

In *dynaCERT's* Triple-A Smart Sustainable Company Evaluation, Triple-A reports that the United Nations Sustainable Development Goals and the Paris Climate Accord form the world's strongest common agenda for achieving peace and prosperity on a healthy earth.

The extraordinary Triple-A endorsement of *dynaCERT* allows its dealers to engage with cities with the assurance that the Company's HydraGEN™ technology has a significant contribution to the Sustainable Development Goals.

City of Woodstock and other Municipalities

In September 2020, the Company announced that it has agreed to equip diesel powered vehicles of the City of Woodstock, Canada ("Woodstock" or the "City") with the Company's HydraGEN™ technology to reduce Carbon Emissions and reduce fuel costs. A conventional public transit bus and a recycling packer truck have had HydraGEN™ HG2R technology units installed. The duty cycles for these vehicles range from 8 hours to 16 hours per day and can be compared to other vehicles in the Woodstock fleet of a similar age and duty cycle. The Company has provided the City with the results of the recorded baseline carbon emissions (O2, NO, NO2, NOx, CO, CO2, Flue Temp) of the City's entire bus and garbage fleet and an estimate of the potential Greenhouse Gas reductions and fuel savings that can be realized. The results so far have been inconclusive.

dynaCERT is also working with Provincial and Federal Governments, several municipalities, and power utility providers across Ontario supplying quotes and extensive analyst reports for their fleets showing the potential fuel savings and more importantly the emissions reductions and Greenhouse Gas reductions that could potentially be realized with the utilization of HydraGEN™ "Carbon Emission Reduction Technology".

One major power utility producer in Ontario has purchased an initial 15 units. Negotiations continue with other municipalities across Ontario.

Technology Validation, Certifications and Advancements

Independent testing with HG1 units now having the new DYA Smart ECU began in June 2017 at the North American-accredited PIT Group in Quebec. The PIT Group report found that the HydraGEN™ technology HG1 unit provided a 5.9% improvement in fuel consumption. Testing also proved that emissions were reduced significantly - CO by 48.1%, THC by 50.0%, and NOx by 46.1%, all of which exceeded *dyna*CERT's estimates.

The PIT Group wrote to *dynaCERT* in an email separate to the report: "…for any kind of automotive technology, 5.9% fuel savings is a result to be envied".

In May 2018, the Company began testing for the Homologation Certification process of the Transport Ministry of Germany, Kraftfahrt-Bundesamt ("KBA"), in cooperation with TUV NORD and TUV SUD in Germany to European standards for an Allgemeine Betriebserlaubnis ("ABE") (the general operating permit) that is required for all equipment used on pan-European road vehicles.

In August 2019, the Company received the ABE Homologation from KBA. In 2019, and 2020, the German Federal Motor Transport Authority (KBA) issued a general operating license (ABE) for *dynaCERT'* HydraGEN™ technology on the basis of UN-ECE Regulation 143 for MAN & Mercedes engine families.

The Company's "Smart ECU" has shown significant advantages and improvements over the older version of the ECU in several key areas: reading, collecting, storing and transmitting of data and altering the flow of gases produced; GPS capability; providing General Packet Radio Service ("GPRS") capability for remote access and allowing for future tracking.

In July 2020, the Company reported that in the United Arab Emirates, where the Company has an active dealer, Castle Star General Trading LLC, the Company's products have received homologation of *dynaCERT's* HydraGEN™ technology by way of seven (7) unique Certificates of Conformity and Schedules of Certification under the Emirates Conformity Assessment Scheme, based on recent TUV South testing in Germany. The Company's products can now be offered to numerous markets in Dubai and other parts of the UAE and the Middle East.

Research and Development Initiatives

Generally, the Company's HydraGEN™ Technology has depended entirely on R&D expenditures related to securing the Company's line of innovative patents, patents-pending and associated global trademarks showcasing the Company's advancements in Hydrogen Technology.

More specifically, on the Company's HG1 models, the Company has reduced the number of unique parts from over 300 to under 210 in order to reduce costs (making the product more robust, easier to manage, assemble and service), enhanced the engineering of the HG1 to allow it to function in high temperature and low temperature climates and environments, enhanced safety features of the HydraGEN™ technology, and made the product more user friendly, such as with the automatic distilled water filling mechanism.

On its HG2 models, the Company has developed these units to adapt *dynaCERT*'s HydraGEN™ Technology that was originally developed for the HG1 to work on smaller size diesel engines (under 8 litres of displacement and for refrigerated trailers ("Reefers") in order to address a sizeable world market for such smaller engines.

Using the HydraGEN™ Technology, several years of R&D by the Company also resulted in the larger HGxC series of products, namely the HG4C and HG6C products, which are to be used primarily in heavy mining industry vehicles and construction equipment markets.

R&D expenditures have also consisted of expenditures that are required for PIT Group studies in Canada and subsequently for German Homologation and India's iCAT certification requirements.

dynaCERT also spent required R&D funds to develop its original Smart ECU and the current model Smart ECU2, developing both the hardware and related software and, over time, the related continuous enhancements, as well as reporting software, thereby providing alarms and warnings to both users and *dynaCERT* remotely in real time.

In furthering the functionality of the Smart ECU versions, *dynaCERT* is also developing its HydraLytica™ Telematics system and subsequent enhancements whereby users can monitor both carbon emissions savings and fuel savings in real time for each vehicle outfitted with HydraGEN™ Technology units.

As more HydraGEN™ units are deployed in the field, *dynaCERT* continues its R&D to further enhance its line of HG1, HG2, HG4C and HG6C products, and HydraLytica™ services to end users.

dynaCERT's HydraGEN™ electroliser has gone through a series of transformations over the past 17 years to meet market demand. *dynaCERT*'s Alkaline Hydrogen HG3 electrolyzer is best suited for hydrogen applications up to a pressure of 15 bars and production capacity requirements of up to 500 L/hour. The stackable horizontal design makes it capable to meet higher hydrogen and oxygen demand.

dynaCERT's R&D Department has commenced developing a larger-volume AEM electroliser to produce Hydrogen Gas under pressure in larger quantities than its current HydraGEN™ technology. This has been done to date using current and available known technologies while R&D developed a unique Flow Field Plate and applied for a patent for this plate, which is unique to the industry. AEM technology, although not new to the industry, to date has not been widely used or understood.

Refer to "Results of operations for the three and six months ended June 30, 2022 compared to the three and six months ended June 30, 2021", for a breakdown of expenditures on research and development initiatives for the three and six months ended June 30, 2022.

PRODUCTS

HG1

dynaCERT's flagship product offering for the HG1 line includes the HG1B and HG1R models in both 12vdc and 24vdc versions, which targets the 10 to 15 litre diesel engines. These HG1 units are now in production and are outfitted with the latest SMART ECU2 controller. The Company has initiated a Continuous Product Improvement (CPI) program that is focused on making enhancements to the manufacturing operation to improve product quality. When operating at capacity, it is anticipated that the Company will be able to produce 6,000 HG1 units per month in its Toronto assembly facilities. New assembly line equipment has been engineered and was implemented in early 2020. The Company has also now implemented systems based on Automotive Industry Action Group (AIAG) and ISO standards. Each unit manufactured has real time traceability for all Quality Inspections performed and logged digitally to the Company's ERP database. All supplied significant components are also traceable to the source and quality checks are performed. Layered audits are performed regularly to ensure that the integrity of these processes are sustained. All customer feedback is reviewed by *dynaCERT's* Engineering group and vetted through the Company's formal engineering change process.

The upgrades to the HG1 feature fewer moving parts, less electrical connections, a simpler design and more user-friendly operation than the existing HG145 units that had been deployed since early 2017. *dynaCERT* continues to offer existing customers with the latest upgrades to ensure its continued goodwill with end-users.

HG2

The Company launched the marketing of its HG2 line of on-board, on demand hydrogen delivery system for diesel engines in August 2019. After approximately two years of R&D, testing, verifications, modifications, and re-designs, HG2R units with HydraGEN™ technology products are available and being shipped.

The HG2 unit is reduced in size from the HG1 unit. The HG2R unit is suited for smaller diesel engines than those that are specifically suited to the HG1 line of HydraGEN™ technology. The HG2R unit is designed to be appropriate for those displacement diesel engines used in Buses, Class 2 to Class 7 trucks, Refrigerator Trailers and Containers ("Reefers"), Mobile Construction Equipment, Small Generators, and Smaller Trucks commonly found outside of North America, such as in European countries and in India and Pakistan. This market size represents approximately 20 million applications in North America and similar sized market opportunities in each of the European and Asian markets.

dynaCERT's engineers were successful in combining the benefits of two prototype HG2 models into one single more advanced and powerful model. The HG2R model includes a completely newly developed HydraGEN™ technology reactor design, a built-in water tank, a climate control system and *dynaCERT*'s Smart ECU2. Under normal operating conditions, the HG2R unit will produce hydrogen (H2) gas flows suitable for diesel engines from 2 to 8 litres in displacement.

HG4C & HG6C

dynaCERT's product offering also includes the HG4C targeted for 40 to 60 litre engines, and the HG6C targeted for 60 to 100 litre engines, as used in the stationary generator market in mining applications and also for the large rock hauler trucks used in open pit mines for above ground mining. This is a result of many discussions with producing mining companies that are operating mines globally, that have set corporate goals to reduce their environmental footprint. These new models have multiple HG1 reactor units inside a single large case. They are outfitted with a large distilled water tank for longer use between refills. The cases are temperature-controlled, in certain cases for up to +50C to as low as -40C functionality with availability of an additional heating system. Each case has an air filtration system to reduce dust ingress.

As models are already custom configured to match the particular model and horsepower of the end user's engine, multiple units can even be ganged together for a single engine that is larger than 100 litres.

SALES

Sales mostly represent units bought and installed on larger fleets or companies that are running initial pilot projects while closely monitoring the fuel savings and emission reductions with the support of *dynaCERT* and our HydraLytica™ telematic software installed.

During the three months ended June 30, 2022, the Company recognized sales of $97,148 through the sale of 5 HydraGEN™ units for larger applications. During the six months ended June 30, 2022, the Company recognized sales of $194,776 through the sale of 20 HydraGEN™ units respectively to dealers and clients.

Global Mining Industry

In Q1 2021, *dynaCERT* shipped or received confirmed orders of its flagship HG1 HydraGEN™ technology units as well as its sister HydraGEN™ HG2R, HG4C and HG6C large capacity units to international mining companies operating in Russia, China, Chile, Brazil and Peru through sales to its arms-length dealer H2Tek which specializes in the sale of HydraGEN™ technology in the mining industry. H2Tek is sponsored internationally by Export Development Corporation, a Crown Corporation of Canada. *dynaCERT* has delivered HG units for above ground and underground mining machinery to a coal mining operating company in China. Operations such as diamond mines, coal mines, copper and gold mines are adopting *dynaCERT*'s proprietary HydraGEN™ technology globally. The HydraGEN™ HG4C and HydraGEN™ HG6C large capacity units have been deployed in open pit mining operations on large 50 & 68-litre diesel engines that operate in hostile climates where temperatures dip to -40 degrees Celsius and are located in very remote areas of the planet. Other major mining companies in South America and Australia are also trialing HydraGEN™ units where their open pit mine temperatures could reach +50C deep in the pit and with limited air ventilation causing air pollution inversions.

Trade Shows

dynaCERT was an exhibitor at the Truck World Show in Toronto, from April 21, 2022 to April 23, 2022. Truck World is a trade & industry event. The Show is a meeting place for Canada's trucking industry, featuring everything related to trucking: equipment, innovations, connections, and solutions, featuring over 500 exhibitors and new products showcase, including *dynaCERT's* flagship HydraGEN™ line of global solutions to reduce pollution.

LEGAL MATTERS

The Company has filed a Statement of Claim with the Ontario Superior Court of Justice to recover cost associated with the loss due to the defective components, the work related to the redesign, and the delays in income related to business interruption in the total amount of $47.7 million. Included in the amount claimed is $46.8 million relating to the opportunity loss on potential sales of $70.8 million to June 30, 2017.

The defendant filed a Statement of Defence and the action is proceeding to discovery, however, the COVID-19 pandemic resulted in a delay of the scheduled examinations. In January 2021 and again in September 2021, both parties held examinations for discovery and the Company awaits answers to undertakings and refusals, including production of additional documents. A mediation of this dispute took place in April 2022 and negotiations continue.

BUSINESS DEVELOPMENTS

HydraLytica™ Telematics

In 2019 and 2020, the Company made significant advances of its telematics software in order to better demonstrate the effectiveness of its products to end-users.

dynaCERT formally launched its vehicle telematics device and software ("HydraLytica™") in July 2019, enabling easy access to fuel savings and carbon emission reduction reports from diesel-powered vehicles and machinery equipped with the Company's HydraGEN™ technology.

The Company provides its dealers and clients such as construction companies, truckers and fleet owners equipped with the HydraGEN™ technology with HydraLytica™ Telematics so that they can easily monitor from their computers an automatically-calculated savings of diesel and carbon emissions while the vehicle is in use.

HydraLytica™ receives data directly from a truck's on-board-diagnostic port (the "OBD port"), and communicates this data to *dynaCERT's* cloud server remotely. At the time of activation of a HydraGEN™ unit the new software records, from the OBD data, the total lifetime mileage and lifetime hours used and calculates fuel consumed. Once the HydraGEN™ unit is operational, HydraLytica™ determines fuel consumption, average speed and distance traveled, and calculates fuel savings and reductions of polluting emissions in kilograms of CO2 equivalent ("CO2e"). CO2e is the basis of calculating Carbon Credits.

The HydraLytica™ software is designed to allow *dynaCERT* to provide documented proof to the market of the effectiveness of the HydraGEN™ technology as stated. Since the data used and processed is taken directly from a vehicle's OBD port, HydraLytica™ removes any doubts about the performance of the HydraGEN™ technology as it does not rely on any human interpretation which could possibly be biased. With HydraLytica™, users will receive viewable and written confirmation direct from their own diesel engines that its HydraGEN™ technology is working and have peace of mind regarding performance.

HydraLytica™ software also enables a user to access telematics information from any location equipped with an internet connection. The HydraLytica™ software also clearly displays historical daily and weekly travel data after the HydraGEN™ technology has been installed on a vehicle. HydraLytica™ continuously maps the routes and locations of vehicles, both in real time and historically, and displays when the vehicle is moving or stationary or when its ignition is off. The intuitive user-friendly software of HydraLytica™ allows truckers and fleet owners to review historical and current performance of their on-road and off-road vehicles.

DISH Telematics

In September 2020, DISH entered into a 25-month Development and Royalty Agreement with Corsario Ltd. ("Corsario") and GP Logix Inc. ("GP Logix"), a wholly-owned subsidiary of Corsario, for the development of technology including software and hardware exclusively on behalf of DISH for its expansion into the FreightTech industry. As per the agreement, DISH agreed to license certain licensed products, on a non-exclusive basis, to GP Logix, subject to payment to DISH of a 50% royalty on the net sales of GP Logix. The development of all proprietary right, title in, and to the technology, intellectual property or work product, including all intellectual property rights therein, is to be assigned to, and owned by, DISH. *dynaCERT* views this as an opportunity to enter into the FreightTech industry as a supplementary evolution of services that fit naturally with *dynaCERT's* fuel-savings and emission-savings market, while increasing the scope of applications and utility of its HydraLytica™ Technology (which measures and tracks the fuel savings and greenhouse gas reductions (CO2e) in real time for users). This is in response to the growing industry needs of logistics companies and the broader trucking management software ecosystem. For a discussion regarding certain accounting treatments of the foregoing transaction, see "Loss on loans, investments, and prepayments" regarding the impairment of the 25-month prepayment under this agreement.

Patents and Proprietary Technology

dynaCERT has several patent applications filed in the US, Canada and other parts of the world, and patents pending for different aspects of the HydraGEN™ technology. These are progressing through the normal patent application process. The Company's R&D team has made improvements to its existing HydraGEN™ technology, and the Company has filed additional claims capturing those improvements.

Below are some of the key patents and patent applications in *dynaCERT's* patent portfolio:

Patents Granted

The Company now owns 18 distinct patents for different countries around the world.

On April 9, 2019, the Company was granted a US Patent number 10,253,685, called "Method & System for Improving Fuel Economy & Reducing Emissions of Internal Combustion Engines". The Canadian version (patent application number 2882833) of this patent was granted on June 4, 2019 and issued to the Company on September 17, 2019. A continuation application with additional claims to US Patent number 10,253,685 was filed on February 20, 2019 and a US Patent number 10,494,993 was issued on December 3, 2019. Another continuation application, (application number 16,661,575), which was filed on October 23, 2019, was issued a patent (patent number 10,883,419) on January 5th, 2021.

On September 3, 2019, the Company was also granted another key US Patent number 10,400,687, called "Management System and Method for Regulating the On-Demand Electrolytic Production of Hydrogen and Oxygen Gas for Injection into a Combustion Engine", which is referred to by the Company as the "Smart ECU patent". The embodiments of this US Patent relate to a management system and method that can simultaneously reduce polluting emissions and improve the performance of an internal combustion engine by: determining *dynaCERT's* reactor performance level or calculating the amount of gas being generated by *dynaCERT's* on-demand electrolytic reactor; monitoring the engine performance level, determining whether the engine performance level would change (i.e. decrease or increase), or remain the same to forecast a future engine demand level; adjusting the reactor performance level to improve the engine performance ahead of the forecast future engine demand level materializing to minimize parasitic loss associated with reactors operating continuously (i.e. reactors that are not capable of adjusting their performance level or the level of produced gas according to the real time engine performance level) and, thereby, improving the engine performance and reducing emissions.

Following a PCT application in 2017, patent applications have been filed in Canada and other countries and are awaiting review. The Mexican application has been granted and patent number 380442 has been issued. The Russian application has also been granted and patent number 2748712 has been issued. The Chilean application has been granted and patent number 63.777 has been issued. The Chinese application has also been granted and patent number ZL2017800653620 has been issued.

The EPO (European Patent Office) application (application number 17862395.5) has been allowed, and the patent has been registered in Germany, France & the UK. The Saudi Arabian application (application number 519401612) has been granted and patent number 9216 has been issued. The Israeli application (application number 265880) has been granted and patent number 265880 has been issued.

Additionally, the applications that were filed in Israel (265880), Saudi Arabia (519401612) and China (201780065362) have been allowed.

Patent Applications

Some of the significant patent applications are described below.

Two continuation applications (number 16,514,460 and number 16,514,543), claiming the benefits of the US Patent number 10,400,687 ("Management System and Method for Regulating the On-Demand Electrolytic Production of Hydrogen and Oxygen Gas for Injection into a Combustion Engine") were filed on July 17, 2019. These applications have been granted, and patent number 10934952 and patent number 10961926 have been issued. Another continuation application (application number 17184005) which was filed on February 24th, 2021, has been granted and patent number 11268458 has been issued. Another continuation application (application number 17582527) which was filed on January 24th, 2022 is currently pending examination.

Following a PCT Application in 2018 entitled "Systems and Methods for Tracking Greenhouse Gas Emissions Associated with an Entity", patent applications have been filed in Canada, USA and several other countries around the world. This application (PCT/CA2018/051235) is a method to securely and accurately capture and transmit data on greenhouse gases associated with the following: Residential Entity (single-family residence, townhouse, condo, apartment building), Industrial Entity (factory), Commercial Entity (medical building, educational institution), Power Generation Entity, Railway Entity, Marine Entity, Aviation Entity, On-Road & Off-Road Entities (trucks, cars, buses, ATVs), Agricultural Entity (tractors, combines, barns). The Company also included fertilizers, pesticides and other chemicals and carcinogens in its patent scope. *dynaCERT's* data collector, the Smart ECU, when attached to the emission source by way of sensors or any other measuring devices, can directly measure emissions output.

When the data is collected for the first time, it goes through a series of validation processes in order to determine an emission offset measurement based on an emission baseline. The output data is encrypted and then transmitted to a portal or platform where the data is analyzed to determine any changes in emissions output to validate compliance, determine amount of greenhouse gas credit or offset such as Carbon Credits required for trading.

The Russian application (application number 2020114937) has been granted and patent number 2767291 has been issued.

The USA application (application number 16837032) has been granted and patent number 11270319 has been issued. A continuation application (application number 16875843) which was filed on May 15th, 2020 has been allowed. The fees have been paid and the Company is waiting for the patent to be issued.

Following a PCT Application in 2019 entitled "Systems and Methods for Improving Fuel Economy of Internal Combustion Engines", patent applications have been filed in Canada, USA, Mexico and EPO.

The USA application (application number 17050892) has been granted and patent number 11,339,730 has been issued.

Carbon Credits

Management believes an opportunity exists to monetize carbon credits from the HydraGEN™ technology operating on diesel engines. Toward this goal, the Company's patented "Smart ECU" can allow the receipt of allocated Carbon Credits through a European platform which is consistent with the requirements resulting from the Paris Accord.

In recognition of the importance of Carbon Credits, dynaCERT has entered into a contractual agreement with International Environmental Partners Limited ("EP") of the UK, and its President, Ms. Monika Wojcik, to manage two different but significant dynaCERT applications in the certification of the carbon reductions generated by its HydraGEN™ technology: (a) VERRA a highly recognized international certification organization based in Washington, DC; and, (b) the Clean Development Mechanism (CDM) for developing countries which has been administered globally since April 6, 2007 by the United Nations offices in Bonn, Germany, and which bases its criteria as a result of an EU Directive 92/57/EEC (OJ L245, 26.8.92) in the Kyoto Protocol (see Press Release dated June 7, 2018). EP is a Sustainability Advisor, Carbon & Biomass trader with relevant knowledge and data of over 15,000 carbon projects from all over the world. dynaCERT, working with these consultants, is placing its products in the front line to help HydraGEN™ technology end-users earn Carbon Credit Certificates from the emissions reductions in the transportation industry, a world-wide leading origination that has not been previously possible.

In November 2019, dynaCERT announced that the advancement of its application for a new Carbon Emission Reduction Methodology to develop Carbon Credit projects from its HydraGEN™ technology and HydraLytica™ Telematics abilities to reduce carbon emissions on a world-wide basis. With the support of EP, the Company has completed and submitted the application to develop a new Methodology to obtain Carbon Credits from the planned Carbon Credit projects which would be made available to dynaCERT clients. The application, submitted to Verra (www.verra.org) under its VCS programme, specifies an all-new Carbon Emission Reduction Methodology. The proposed Methodology uses the Company's patented HydraGEN™ technology to lower carbon emissions and its HydraLytica™ Telematics technology to securely record carbon emissions and other non-personal data from diesel and gas engines (see Press Release of June 7, 2018). Verra has furthered the application through multiple internal reviews.

In January 2021, dynaCERT announced that Verra has approved the concept note of the Company that is designed to secure Carbon Credits by deploying dynaCERT's patented HydraGEN™ technology and HydraLytica™ Telematics on a global basis.

On October 18, 2021, dynaCERT announced that the executive management of Verra, which manages the world's largest greenhouse gas program, the Verified Carbon Standard ("VCS"), has announced to dynaCERT that its Methodology in respect of its Carbon Credit Certification has reached a new important stage. As part of its normal required process of certification, Verra has advanced dynaCERT's Carbon Credit Methodology to its Global Public Comment Stage in order to meet Verra's Verified Carbon Standard. Verra has indicated that: "This Methodology applies to project activities that improve efficiency of vehicle fleets and mobile machinery (e.g., fleets of trucks, buses, cars, taxis or motorized tricycles, excavators, cranes), resulting in reduced fuel usage and GHG emissions. This Methodology is globally applicable."

On March 17, 2022, notification was received by the senior programme officer of Verra that Verra posted the request for proposals for the Validation/Verification Body ("VVBs") on its website and sent it out to the list of accredited VVBs. The accredited VVBs had until March 30, 2022, to submit proposals.

On July 13, 2022, the Chief Program Development and Innovation Officer of Verra signed an agreement engaging Earthhood Services Private Limited (Earthhood") to provide independent third-party verification services related to dynaCERT's Carbon Credit Methodology.

In summary, dynaCERT and Verra have achieved the following steps in regard to dynaCERT's Carbon Credit initiatives:

- dynaCERT Inc., the developer under the VCS programme, pursuant to the VCS rules of Verra, has, in October 2021, prepared the methodology submission and documentation and completed Step 1 as set out in Verra's methodology process.

- Verra has reviewed the methodology documentation as set out in Step 2 of its methodology approval process and has conducted its stakeholder consultation with the public as set out in Step 3 of its approval process which was completed after proposals were submitted in March 2022.

- As Step 4 of Verra's approval process, Verra contracted with a Verra approved Validator to provide services in respect of the "Validation of the Methodology" in accordance with the terms and conditions set out in the agreement and the VCS Rules.

- Accordingly, on July 13, 2022, Verra entered into a contract with Earthhood Services Private Limited (Earthhood") whereby Earthhood was engaged to conduct the validation of the dynaCERT's methodology in accordance with VCS Rules.

- dynaCERT, Earthhood, Verra and EP are now currently engaged in completing the VCS process with a view to dynaCERT's Carbon Credits achieving Verra's Verified Carbon Standard.

Martin Technologies LLC

In January 2021, the Company announced that it has agreed to partner with Martin Technologies LLC to collaborate on scientific expansions required to introduce *dynaCERT's* HydraGEN™ technology to Original Equipment Manufacturers globally. Upon completion of phase one of the ongoing testing and validation of the science behind *dynaCERT* technology, Martin Technologies determined that further work is warranted to overcome certain sensors causing the engine's computer under some conditions to override the benefits of the gases introduced. In January 2021, Mr. Harold Martin, the CEO of Martin Technologies LLC, also joined the advisory board of *dynaCERT*.

PERFORMANCE MILESTONES AND VERIFICATION UPDATE

New trial programs in mining and transport sectors were started in the quarter to further verify the HydraGEN™ technology to satisfy potential customers on their own transport, equipment and power generation systems. These programs are continuously ongoing.

European Homologation

In August 2019, *dynaCERT's* wholly-owned European subsidiary, *dynaCERT* GmbH obtained from Kraftfahrt-Bundesamt ("KBA"), the Transport Ministry of Germany, the Allgemeine Betriebserlaubnis ("ABE") National Type Approval ("Homologation"). ABE Homologation, which emanates from KBA, permits the marketing, sales, installation and use of *dynaCERT*'s HydraGEN™ technology in Germany. The ABE provided by the KBA is a National Approval. Other countries may accept the ABE and give an approval based on it such as Switzerland. The International Standard are the UN-ECE Regulations that are valid in 60+ Countries.

Applications for ABE Type Approval must meet stringent testing and validations required by rigorous and exacting regulation in Germany. *dynaCERT's* HydraGEN™ technology is the only hydrogen on demand gas supply system that has ever been approved by KBA and received Homologation for the ABE Type Approval. This unique advantage gives *dynaCERT* a lead in hydrogen-based technology and provides a strong market benefit as well as a barrier to entry for imitators and possible competitive technologies. The addressable market of *dynaCERT's* HydraGEN™ technology has expanded significantly and globally with the addition of this first-in-kind ABE Homologation.

As a result of its reputation for excellence, the acceptance of an ABE Homologation is monitored by other countries on every continent of the globe. In regulating their transportation industry, many countries and jurisdictions world-wide rely on the ABE Homologation as the unequivocal standard of due diligence and excellence for the regulated use of new expertise, such as d*ynaCERT's* HydraGEN™ technology.

dynaCERT's HydraGEN™ technology underwent thorough testing to obtain ABE Homologation. Moreover, the ABE Homologation from KBA required approximately 26 months of proofs of concept, testing, validations, verifications, confirmations, authentications, rigorous trials with strict protocols, scientific analysis, exacting reviews using both on-road and in-laboratory methods and accompanying certified reports. Numerous engineers, combustion specialists and automotive experts, including world- renowned authorities in Europe, such as Continental EMITEC, TÜV Nord, TÜV Süd, were consulted and relied upon by KBA in granting the ABE Homologation.

The new HG1R24 and HG2R24 Euro-versions of the HydraGEN™ technology have completed and passed the EMC and mechanical testing and the testing submissions have been sent to the KBA for finalization of what is termed in Germany as a 'Delta Approval' which is required when products that have already passed ABE Certification get upgrades from the manufacturer.

The Delta Approval of the KBA was approved on November 10, 2021.

<u>Austrian Adoption</u>

In advance of receiving KBA Homologation ABE for Europe, *dynaCERT* secured permission to install units on government-owned vehicles in Austria. In 2019, the Province of Carinthia ordered and installed two of four HydraGEN™ HG1-45B units on diesel-powered heavy-duty road service vehicles owned by the Province of Carinthia. The office of the provincial government of Carinthia, in consultation with the Road and Maintenance Department and *dynaCERT*, extended the pilot project in Carinthia as results to date have been inconclusive.

In September 2020, two MAN Euro VI dump trucks of the province's public services were equipped with the HydraGEN™ technology. The installation was executed by *dynaCERT* GmbH in conjunction with one of our European dealers, Freetron, and the results are being monitored for emission and fuel reductions.

RESULTS OF OPERATIONS

Results of operations for the three months ended June 30, 2022 compared to the three months ended June 30, 2021

The Company reported a loss and comprehensive loss from operations for three months ended June 30, 2022 of $2,308,784 compared to $4,893,820 for the three months ended June 30, 2021. Revenue decreased by $317,355 during the current period compared to the prior period. See Sales section.

Key influencers to the increase in expenditures are:

- As the Company did not qualify for the Canadian Emergency Wage Subsidy ("CEWS") during the three months ended June 30, 2022, expenditures increased by $220,889 compared to the three months ended June 30, 2021 as the Company received funds for CEWS during the prior year period.
- During the three months ended June 30, 2022, legal and audit fees increased by $337,691, related to the activities described in the section "Loss on loans, investments, and prepayments".
- During the three months ended June 30, 2022, cost of goods sold increased by $486,176 compared to the prior comparative quarter as the Company continued to apply the approach regarding the determination that specific employees wages were directly related to the production of HydraGEN™ products.

Key influencers to the decrease in expenditures are:

- Share-based compensation decreased by $2,716,441 in Q2 2022. This decrease was due to the Company granting nil stock options during the three months ended June 30, 2022, compared to the grant of 7,960,000 stock options during the three months ended June 30, 2021.
- General and administrative expenses decreased by $165,236. The majority of this decrease was related to a write-off of prepayment software costs. See "Loss on loans, investments, and prepayments".
- Research and development costs decreased by $460,516 in the current period compared to the prior year comparative period as the Company's direct salaries related to cost of goods sold for HydraGEN™ products in the current year. In the prior period, salaries directly related to research and development.
- Business development costs decreased by $352,843 in the current period compared to the prior year comparative period as certain current quarter expenses related to research and development, and expenses to loss on loans, investments, and prepayments. In the prior year comparative period, these expenses directly related to business development initiatives.
- During the three months ended June 30, 2022, an employee repaid a loan of $199,238. See "Loss on loans, investments, and prepayments".

Results of operations for the six months ended June 30, 2022 compared to the six months ended June 30, 2021

The Company reported a loss and comprehensive loss from operations for six months ended June 30, 2022, of $4,566,280 compared to $7,271,209 for the six months ended June 30, 2021. Revenue decreased by $269,520 during the current period compared to the prior period. See Sales section.

Key influencers to the increase in expenditures are:

- As the Company did not qualify for the Canadian Emergency Wage Subsidy ("CEWS") during the six months ended June 30, 2022, expenditures increased by $596,688 compared to the six months ended June 30, 2021 as the Company received funds for CEWS during the prior year period.
- During the six months ended June 30, 2022, legal and audit fees increased by $495,967, related to the activities described in the section "Loss on loans, investments, and prepayments", and increases in the audit fee.
- During the six months ended June 30, 2022, cost of goods sold increased by $1,021,073 compared to the prior comparative quarter as the Company continued to apply the approach regarding the determination that specific employees wages were directly related to the production of HydraGEN™ products.

Key influencers to the decrease in expenditures are:

- Share-based compensation decreased by $3,097,320 in Q2 2022. This decrease was due to the Company granting nil stock options during the six months ended June 30, 2022, compared to the grant of 8,810,000 stock options during the three months ended June 30, 2021.
- General and administrative expenses decreased by $381,031. The majority of this decrease was related to a write-off of prepayment software costs. See "Loss on loans, investments, and prepayments".
- Research and development costs decreased by $564,106 in the current period compared to the prior year comparative period as the Company's direct salaries related to cost of goods sold for HydraGEN™ products in the current year. In the prior period, salaries directly related to research and development.
- Business development costs decreased by $759,927 in the current period compared to the prior year comparative period as certain current quarter expenses related to research and development, and expenses to loss on loans, investments, and prepayments. In the prior comparative period, these expenses directly related to business development initiatives.
- During the three months ended June 30, 2022, an employee repaid a loan of $199,238. See "Loss on loans, investments, and prepayments".

Research and development expenditures vary depending on amount of work being done on product development and testing. To date, the Company has expensed all research and development costs. For a further discussion regarding the Company's R&D initiatives. See "Research and Development Initiatives" herein.

The following tables provide a breakdown of the Company's expenditures on R&D initiatives by product and component for the three and six months ended June 30, 2022:

Total by component	Amount	
	Three months ended June 30, 2022	Six months ended June 30, 2022
Material	$ 93,268	$ 293,656
Labour	39,624	149,952
OH	84,209	354,763
Total	$ 217,101	$ 798,371

Total by Product	Amount	
	Three months ended June 30, 2022	Six months ended June 30, 2022
Hydralytica	$ 47,924	$ 89,472
AEM Electroliser	44,366	181,146
HG1 & HG2	124,811	527,753
Total	$ 217,101	$ 798,371

The Company's system for developing the breakdown of the Company's expenditures on R&D initiatives is prepared on a manual basis and not from the Company's internal computer systems. The details for this presentation are not available for the three and six months ended June 30, 2021.

Loss on loans, investments, and prepayments

The Company incurred the following losses on loans, investments, and prepayments during the fiscal year ended December 31, 2021.

Related party transactions

- During fiscal 2020 and fiscal 2021, the Company entered into a series of loans in connection with the exercise of stock options ("Option Loans"), including a loan in the principal amount of $340,000 to a director and officer of the Company, and a loan in the principal amount of $199,238 to an employee of the Company. During fiscal 2021 these individuals sold the underlying securities relating to their respective Option Loans. The Company recognized a loss on these unsecured Option Loans after considering the creditworthiness of the debt holders, and the Company's recourse options.

- The Company advanced a subordinate loan in the form prescribed in Appendix B of National Instrument 31-103 in the principal amount of $150,000 to Galaxy Placements Inc., a company controlled by a director and officer of the Company that applied to become an Exempt Market Dealer, and in addition, the Company acquired 20% of the issued and outstanding shares of Galaxy Power Inc. for consideration of $250,000. Galaxy Power Inc. is a company controlled by two directors and officers of the Company. The Company recognized a loss on both the investment and the loan after considering the lack of security for the loan, there was no provision for a payment plan between the debt holder and the Company, and no foreseeable future economic benefit is expected on the investment.

Other transactions

- During fiscal 2020, the Company acquired 20% of the issued and outstanding shares of KK for consideration of $516,479 (US$367,000). Additionally, the Company provided a loan to KK in the principal amount of $1,020,293 (US$725,000). The Company has recognized a loss on the balance of the investment in KK of $470,299, and a loss of $976,459 for expected credit losses related to the loan with KK as the Company decided that it would no longer fund KK as KK does not appear to have, nor is it expected to have, the financial capacity to repay the loan and the investment.

- *dynaCERT* International Strategic Holdings Inc. (DISH), a wholly-owned subsidiary of *dynaCERT*, entered into a "25-month Development and Royalty Agreement" with Corsario Ltd. and GP Logix Inc., a wholly-owned subsidiary of Corsario of Mississauga (Canada), pursuant to which it made a prepayment of $1,300,000. The Company recognized a loss on this amount as the work product being developed has not advanced as expected by the Company, resulting in significant uncertainty of the future economic benefit of the work product.

The Company's audit committee engaged independent legal counsel to assist them in examining the validity, legal standing, enforceability, and potential future recoverability of the above noted related party and other transactions. For a summary of the findings and conclusions of the review see "Internal Controls Over Financial Reporting – Material Weakness".

The Company made a demand to the holders of outstanding option and warrant loan for repayment.

During the six months ended June 30, 2022, a loan due from an employee of the Company, in the principal amount of $199,238 was repaid.

LIQUIDITY AND CAPITAL

As at June 30, 2022, cash on hand was $3,754,808 as compared to $8,337,506 at December 31, 2021.

The Company had cash outflows from operating activities of $4,471,154, which was due to a net loss for the period of $4,566,280. The net loss was affected by non-cash adjustments of $612,651, which is comprised of accretion and amortization of $511,116, interest paid of $52,598, a write off of property and equipment of $48,937, and reversal of loss on loans, investments, and offset by prepayments of $199,238. Operating cash flows were affected by non-cash working capital items of $318,287 which comprised of a decrease in amounts payable and other liabilities of $216,601, an increase in inventory $300,281, a net increase in accounts receivables and sales tax receivables of $411,290, offset by a decrease in prepaid expenses of $289,833, an increase in deferred revenue of $19,771.

The Company had cash outflows from investing activities of $60,535, which was due to the acquisition of intangible assets.

The Company had cash outflows from financing activities of $51,009, which was due to lease obligation payments of $250,247 and offset by proceeds for previous exercise of options of $199,238.

The Company has granted loans to employees, officers, and directors in the aggregate amount of $907,549. During the year ended December 31, 2021, the Company determined that certain loans were impaired and recognized a credit loss provision of $539,238 (refer to section "Loss on loans, investments, and prepayments"). As at June 30, 2022, employees, officers, and directors of the Company had loans by the Company in the aggregate amount of $368,312 (December 31, 2021 - $368,312). The loans are non-interest bearing and due on demand. The Company made a demand for repayment to the holders of these loans. During the six months ended June 30, 2022, the Company collected $199,238 of loans which were previously impaired.

The Company expects to be financed primarily through the completion of equity transactions such as equity offerings and the exercise of stock options and warrants. There is no assurance that future equity capital will be available to the Company in the amounts or at the times desired by the Company or on terms that are acceptable to it, if at all. See "Caution Regarding Forward Looking Statements", and "Risks and Uncertainties".

On June 18, 2020, the Company completed a public offering of common shares which raised proceeds of $8,367,400. The Company's intended use of proceeds set out in the Company's short form prospectus dated June 15, 2020 were primarily allocated towards the financing of raw materials and manufacturing and assembly costs in order to deliver finished goods inventory for the KarbonKleen subscription program and other product sales. Due to operational and supply limitations arising due to the COVID-19 pandemic (for details, see "Impact of COVID-19") and the corresponding impact on the KarbonKleen transaction resulting in the impairment of the KarbonKleen investment and loan (see "Loss on loans, investments, and prepayments"), the

Company expects that the proceeds of the offering will be reallocated principally towards working capital and general corporate purposes. As of June 30, 2022 the Company has spent $4,641,917 towards its expected allocation of $5,839,440 allocated to financing raw materials and manufacturing and assembly costs.

Notwithstanding the proposed reallocated uses of available funds as discussed above, there may be circumstances where, for sound business reasons, a further reallocation of funds may be necessary. The actual amount that the Company spends in connection with its intended uses of proceeds will depend on several factors, including those referred to under "Risks and Uncertainties" in this MD&A. It is difficult, at this time, to definitively project the total funds necessary to affect the planned activities of the Company. For these reasons, it is considered to be in the best interests of the Company and its shareholders to afford management a reasonable degree of flexibility as to how the funds are deployed as noted above, or for other purposes, as the need arises.

The reopening of the North American economy is driving a steel boom. While the Company's products use mainly stainless steel, the general increase applies to all steel products. This will potentially affect the cost of goods sold for the foreseeable future.

As at June 30, 2022, the Company had accounts payable and accrued liabilities of $1,111,404 as compared to $1,328,005 at December 31, 2021.

Going concern uncertainty

At each reporting period, management assesses the basis of preparation of the financial statements. The Company's unaudited condensed consolidated interim financial statements have been prepared on a going concern basis in accordance with IFRS. The going concern basis of presentation assumes that the Company will continue its operations for the foreseeable future and be able to realize its assets and discharge its liabilities and commitments in the normal course of business. dynaCERT's unaudited condensed consolidated interim financial statements do not include any adjustments to amounts and classifications of assets and liabilities that would be necessary should the Company be unable to continue as a going concern. Such adjustments could be material.

For the six months ended June 30, 2022, the Company incurred a net loss of $4,566,280 (June 30, 2021 - $7,271,209) and had negative operating cash flows of $4,471,154 (June 30, 2021 - $4,498,704). Although the Company has generated revenue from customer sales, the sales volumes achieved to date have not been sufficient to generate the margins required to cover the Company's operating costs and research and development costs. The Company has an accumulated deficit of $93,111,539 since inception (December 31, 2021 - $91,049,274).

The Company's ability to continue its operations and to realize assets at their carrying values is dependent upon its ability to generate cash flows from operations and to complete negotiations to obtain and successfully close additional funding from debt financing, equity financings or through other arrangements. While the Company has been successful in arranging financing in the past, there can be no assurance the debt financing or any equity offering will be successful in light of the impact of the COVID-19 virus on global capital markets. Management has determined that there is a material uncertainty related to events or conditions that may cast significant doubt on the entity's ability to continue as a going concern and, therefore, that it may be unable to realize its assets and discharge its liabilities in the normal course of business.

The rapid spread of the COVID-19 virus worldwide has caused significant economic contraction and uncertainty, resulting in delays in sales.

The military conflict between Russia and Ukraine may increase the likelihood of supply chain interruptions and political instability worldwide. Such disruptions could make it more difficult for the Company to source necessary materials and service providers at favorable pricing or at all. While it is difficult to estimate the impact of current or future European or other sanctions on the Company's business and financial position, these sanctions could adversely impact the Company's sales, costs, operations and/or development activities in future periods.

RELATED PARTIES TRANSACTIONS

Key management includes directors and other key employees, who have authority and responsibility for planning, directing, and controlling the activities of the Company.

The Company paid or accrued the following amounts to directors, companies controlled by directors or companies having common directors during the three and six months ended June 30, 2022 and June 30, 2021:

Nature of Transaction	Three Months Ended June 30, 2022	Three Months Ended June 30, 2021	Six Months Ended June 30, 2022	Six Months Ended June 30, 2021
Consulting fees paid to directors	$ 87,621	$ 91,192	$ 190,426	$ 239,171
Short-term benefits	66,000	-	132,000	141,910
Share based compensation	-	-	-	1,126,162
Rent	-	121,343	-	222,291
Total	**$ 153,621**	**$ 212,535**	**$ 322,426**	**$ 1,729,534**

The Company has a lease agreement with a former director of the Company; the amounts included in the table above are inclusive of the period while the former director, was a director of the Company.

Included in prepaid expenses as at June 30, 2022 is $5,000 (December 31, 2021 - $22,854) for advance payments of salaries to an officer and director of the Company for services.

During the six months ended June 30, 2021 a director of the Company repaid an outstanding loan of $362,350, which had an interest rate of 2.1% per annum. Total interest income earned on the loan amounted to $nil for the three and six months ended June 30, 2022 (six months ended June 30, 2021 - $6,975).

The Company incurred renovation expenditures of $689,211 during the six months ended June 30, 2021, which were paid to an entity controlled by the family of an officer and director of the Company. No such expenditures were incurred during the three and six months ended June 30, 2022. As construction on the leasehold was completed, these amounts were transferred to leasehold improvements (See note 4 of the Company's unaudited condensed consolidated interim financial statements for the three and six months ended June 30, 2022).

During six months ended June 30, 2021, a loan of $340,000 was granted to an officer and director of the Company (refer to section "Loss on loans, investments, and prepayments").

During the six months ended June 30, 2021, an officer and directors of the Company exercised stock options pursuant to which they acquired an aggregate of 425,000 common shares (refer to section "Loss on loans, investments, and prepayments").

As at June 30, 2022 loans to key officers, and directors were outstanding to the Company in the aggregate amount of $210,000 (December 31, 2021 - $210,000) relating to share capital. The loans are non-interest bearing and due on demand.

The Chief Financial Officer ("CFO") of the Company is a senior employee of Marrelli Support Services Inc. ("MSSI"). During the three and six months ended June 30, 2022, the Company paid or accrued professional fees of $15,135 and $30,270, respectively (June 30, 2021 - $15,135 and $30,270, respectively) to MSSI. These services were incurred in the normal course of operations for general accounting and financial reporting services. As at June 30, 2022, MSSI was owed $12,370 (December 31, 2021 - $nil) with respect to services provided.

SEGMENTED INFORMATION

The Company currently has one business segment, being the development, production and sale of hydrogen generating systems. *dynaCERT* has developed the next generation of Carbon Emission Reduction Technology for diesel engines in the global market, that also provides significant fuel savings to the operator. The Company's HydraGEN™ Technology uses simple electrolysis to turn distilled water into H2 & O2 gases that are produced on demand.

As at, and for the three and six months ended June 30, 2022, the Company held $23,692 of cash (December 31, 2021 - $39,721) and incurred $157,895 and $270,756 (June 30, 2021 - $50,121 and $131,904) of expenses in Germany through its German subsidiary. The Company's subsidiary DISH holds the shares in the Company's investment in KarbonKleen.

OFF BALANCE SHEET ARRANGEMENTS

The Company is not a party to any off-balance sheet arrangements or transactions.

SHARE CAPITAL TRANSACTIONS

There were no share capital transactions during the three and six months ended June 30, 2022.

CAPITAL MANAGEMENT

The Company's shareholders' equity comprises its capital under management. The Company's objectives when managing capital are to safeguard the Company's ability to continue as a going concern in order to pursue the development of its products and to maintain a flexible capital structure that optimizes the costs of capital at an acceptable risk level.

The Company manages the capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. To maintain or adjust the capital structure, the Company may attempt to issue new shares, issue new debt, acquire or dispose of assets.

In order to facilitate the management of its capital requirements, the Company prepares expenditure budgets that are updated as necessary depending on various factors, including successful capital deployment and general industry conditions. The Board of Directors does not establish quantitative return on capital criteria for management, but rather relies on the expertise of the Company's management to sustain future development of the business.

There have been no changes to the Company's approach to capital management during three and six months ended June 30, 2022. The Company is not subject to externally imposed capital requirements.

OUTSTANDING SHARE DATA AS OF August 12, 2022

The Company has 381,484,180 common shares outstanding as of the date of this report.

Below is a summary of the warrants outstanding as of the date of this report:

Expiry Date	Unit Price	Ending Quantity	$ Value
November 14, 2023	0.65	14,900,000	9,685,000
		14,900,000	**9,685,000**

Below is a summary of the stock options outstanding as of the date of this report:

Expiry Date	Exercise Price ($)	Number of options outstanding
September 19, 2022	0.58	1,000,000
October 23, 2022	0.65	1,146,000
January 31, 2023	0.50	2,670,000
April 05, 2023	0.50	238,096
October 04, 2023	0.25	156,000
March 01, 2024	0.38	3,325,000
May 15, 2024	0.35	250,000
July 30, 2024	0.50	600,000
September 11, 2024	0.50	300,000
October 11, 2024	0.50	50,000
November 12, 2024	0.50	827,000
December 09, 2024	0.52	1,925,000
December 17, 2024	0.55	400,000
July 02, 2025	0.70	4,465,000
July 02, 2025	0.70	1,125,000
October 30, 2025	0.55	100,000
January 26, 2026	0.55	850,000
May 30, 2026	0.50	6,820,000
		26,247,096

RISKS AND UNCERTAINTIES

Prior to making an investment, decision investors should consider the investment risks set out in the Annual Information Form ("AIF"), located on SEDAR at www.sedar.com, which are in addition to the usual risks associated with an investment in a business at an early stage of development. The directors of the Company consider the risks set out in the AIF to be the most significant to potential investors in the Company but are not all of the risks associated with an investment in securities of the Company. If any of these risks materialize into actual events or circumstances or other possible additional risks and uncertainties of which the Directors are currently unaware, or which they consider not to be material in relation to the Company's business, actually occur, the Company's assets, liabilities, financial condition, results of operations (including future results of operations), business and business prospects, are likely to be materially and adversely affected. In such circumstances, the price of the Company's securities could decline and investors may lose all or part of their investment relating to the Company.

ACCOUNTING POLICIES

New standards not yet adopted

Classification of Liabilities as Current or Non-Current (Amendments to IAS 1)

The IASB has published Classification of Liabilities as Current or Non-Current (Amendments to IAS 1) which clarifies the guidance on whether a liability should be classified as either current or non-current. The amendments:

- clarify that the classification of liabilities as current or non-current should only be based on rights that are in place "at the end of the reporting period"
- clarify that classification is unaffected by expectations about whether an entity will exercise its right to defer settlement of a liability
- make clear that settlement includes transfers to the counterparty of cash, equity instruments, other assets or services that result in extinguishment of the liability.

This amendment is effective for annual periods beginning on or after January 1, 2024. Earlier application is permitted. The extent of the impact of adoption of this amendment has not yet been determined.

DISCLOSURE CONTROLS AND PROCEDURES

The Chief Executive Officer and Chief Financial Officer have designed, or caused to be designed under their supervision, and evaluated the effectiveness of the Company's disclosure controls and procedures and have concluded that, based on their evaluation, they are generally effective as at June 30, 2022 (other than in respect of certain material weaknesses that are set forth herein), to provide reasonable assurance that material information relating to the Company and its consolidated subsidiaries is made known to management and disclosed in accordance with applicable securities regulations.

INTERNAL CONTROLS OVER FINANCIAL REPORTING ("ICFR")

The Chief Executive Officer and Chief Financial Officer are responsible for certifying the design of the Company's ICFR as required by Multilateral Instrument 52-109 – "Certification of Disclosure in Issuers' Annual and Interim Filings" and CSA staff notice 52-316 – "Certification of Design of Internal Control over Financial Reporting". The Company's ICFR are intended to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with applicable accounting standards. ICFR should include those policies and procedures that establish the following:

- maintenance of records in reasonable detail that accurately and fairly reflect the transactions and dispositions of the Company's assets;
- reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with applicable accounting standards;
- receipts and expenditures are only being made in accordance with authorizations of management and the Board of Directors; and
- reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the consolidated financial statements.

Because of their inherent limitations, ICFR may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The Chief Executive Officer and Chief Financial Officer have evaluated the Company's ICFR and concluded that they are they are generally effective as at June 30, 2022 (other than in respect of certain material weaknesses that are set forth herein – see "Material Weaknesses"). Management follows the Integrated Framework published by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company has designed appropriate ICFR for the nature and size of its business, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the consolidated financial statements for external purposes in accordance with applicable accounting standards.

During the three and six months ended June 30, 2022, the Chief Executive Officer and Chief Financial Officer have evaluated whether there were changes to the ICFR that have materially affected, or are reasonably likely to materially affect, the ICFR. Certain material weaknesses were identified through their evaluation which was based on the COSO model.

Material Weaknesses

On April 4, 2022, the Company announced that the Company's audit committee had engaged independent legal counsel to assist them in examining the validity, legal standing, enforceability, and potential future recoverability of certain related party and other transactions as disclosed in note 24 of the Company's audited financial statements in respect of the financial year ended December 31, 2021. The review by the Audit Committee was completed and the following is a summary of some of the findings and conclusions of the review. The Audit Committee, in consultation with its independent counsel, conducted a detailed review of each of the items referenced in the aforementioned note 24 of the Company's audited financial statements in respect of the financial year ended December 31, 2021.

This process included reviews of all documents, communications, correspondence, resolutions and supporting materials relating to each item, in addition to conversations between the Audit Committee's counsel and members of the Company's management. The Company is reporting on the following salient points from the Audit Committee's findings:

(a) *Related Party Transactions*

- Regarding loans granted to assist in the exercise of options and warrants, it was determined that such loans are unsecured and repayable on demand following provision of reasonable notice. As each of the option plan participants and warrant holders whose payments are outstanding have acknowledged their debt to the Company, it is anticipated that payment would be forthcoming following the issuance of a demand. Demands have now been issued and enforcement should not be necessary. One of the option loans was repaid during the course of the review being completed.

- Regarding the Company's $250,000 equity investment in Galaxy Power Inc., it was confirmed that the Company continues to hold 500,000 shares in the capital of Galaxy Power. In the absence of any further agreements entered into around this investment, the Company's rights in respect of its investment are limited to the rights of a common shareholder. Though there are no written restrictions on the Company's interest in Galaxy Power being diluted, management of Galaxy Power has confirmed that the Company's 20% interest will not be diluted in connection with any of its preliminary financing activities. The Company's shares in Galaxy Power are also subject to restrictions on transfer. Regarding the Company's $150,000 loan to Galaxy Placements, it was confirmed that such loan is subordinate, unsecured, bearing interest at 10% per year (prorated and calculated monthly) and maturing on December 31, 2023. Repayment of this loan and interest is subordinate to the claims of all other creditors of Galaxy Placements and cannot result in a capital deficiency for Galaxy Placements.

(b) Other Transactions

- The Company continues to hold 20% of the outstanding voting shares of KarbonKleen and its $725,000 loan to KarbonKleen matured on December 31, 2021. There have been no units rented under the rental program with KarbonKleen to date and KarbonKleen no longer has exclusivity in the United States. KarbonKleen's financial position is disclosed in the Company's financial statements, with no revenues having been recognized in the quarter ended March 31, 2022 and June 30, 2022.

- Regarding the royalty agreement among DISH (the Company's wholly-owned subsidiary), Corsario Ltd. and GP Logix Inc., it was noted that the agreement contemplated that a Joint Development and Commercialization Committee consisting of representatives of DISH, Corsario and the Company was to be established to oversee the development of the FreightTech platform.

The Company originally filed its consolidated financial statements and related MD&A for the year ended December 31, 2021, the three months ended March 31, 2022, and statements for other prior periods. The Company was unaware of procedural errors in connection with some of the transactions from the Audit Committee Review and has concluded that certain material weakness in the Company's ICRF have become apparent. These include the following:

- In connection with option and warrant exercises by officers/ directors/employees of the Company), certain Treasury Orders were signed and issued without full payment for underlying shares, as payment was evidenced by loans.

- Certain loans were extended to optionees/warrant holders (who are officers/ directors/employees of the Company) without prompt reporting to the Board and CFO at the time of such loans and without adequate loan / security documentation, though such loans were subsequently ratified by the Board.

- Reporting of such share issuances and loans and related party transactions to the CFO and Audit Committee was only after such transactions were given effect to.

- The Board had adopted a resolution in respect of related party transactions that was weak insofar as it delegated approval for transactions that are not material (below $250,000 (which is the threshold for materiality used in the Company's consolidated financial statements)) to the Investment Committee.

- Certain select transactions were entered into based upon discussions among Board members where Board approval could have been better documented.

A review of the Company's consolidated financial statements for the year ended December 31, 2021, the three months ended March 31, 2022, and prior periods has revealed that the procedural errors did not have a significant impact on the Company's consolidated financial statements.

dynaCERT is committed to improving its control environment. The Company intends to develop and implement procedures aimed at remediating the material weakness. The Company has adopted the following remedial measures:

- The Company has ceased the process of allowing option exercises without full payment of the exercise price in cash.

- The Company has requested repayment of all option and warrant loans based upon either:

  a. negotiated repayment schedules; or

  b. the return of shares for cancellation.

- The Company is communicating with applicable regulatory authorities regarding the administration of the Company's stock option plan.

- The Company is reviewing and refining its process for the issuance of securities in consultation with its corporate legal counsel in connection with all future issuances of securities, which includes a prohibition on the issuance of shares without full payment in cash.

- The Board and the CFO will be provided with notification of all issuances and proposed issuance of securities (including confirmation of full (cash) payment of exercise/issuance prices).

- Board approval will be required for all related party transactions and other transactions that are not within the ordinary course of the Company's business and the prior resolution allowing for Investment Committee approval below a certain materiality threshold has been amended and replaced accordingly.

- Any material impairments of related party transactions require approval from the Audit Committee and the Board of Directors.

- The Company is reviewing its internal control documentation with its internal control consultant and will take such additional actions as are necessary or desirable to remedy the identified weaknesses.

- Galaxy Power and the Company will be entering into an agreement to provide an anti-dilution covenant, whereby Galaxy Power will confirm its verbal commitment that the Company's 20% interest shall not be diluted through any preliminary financing activities of Galaxy Power.

Limitations of Controls and Procedures

The Company's management, including the CEO and CFO, believe that disclosure controls and procedures and internal control over financial reporting, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, they cannot provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been prevented or detected. These inherent limitations include the realities that judgements in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by unauthorized override of the controls. The design of any control system also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed.