



**Written submission from  
Kinetic Knights Robotics - Team 781**

**Mémoire de  
Kinetic Knights Robotics - Team 781**

In the Matter of

À l'égard de

**Bruce Power Inc. – Bruce A and B  
Nuclear Generating Station**

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**Bruce Power Inc. - Centrale nucléaire de  
Bruce A et Bruce B**

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Request for a ten-year renewal of its Nuclear  
Power Reactor Operating Licence for the  
Bruce A and B Nuclear Generating Station

Demande de renouvellement, pour une période  
de dix ans, de son permis d'exploitation d'un  
réacteur nucléaire de puissance à la centrale  
nucléaire de Bruce A et Bruce B

**Commission Public Hearing – Part 2**

**Audience publique de la Commission –  
Partie 2**

**May 28-31, 2018**

**28-31 mai 2018**



# Kinetic Knights Robotics - Team 781

CNSC Intervention

# About Us

## Who We Are, and What We Do

Team 781, the Kinetic Knights, is a robotics team from Kincardine, Ontario. We have been competing in the *FIRST*® Robotics Competition (FRC) since the team's creation in 2001. Team 781 was founded by Bruce Power and is now overseen by a registered charitable organization Kinetic Knights Robotics.

Every year Team 781 is given 6 weeks to build a robot that we use to compete against other robotics teams at District tournaments. Through the *FIRST*® Robotics program, students get hands-on experience in business, science, technology, engineering, and math which helps prepare them for post-secondary education and the workforce.

Since the Team 781's inception in 2001, and the formation of Kinetic Knights Robotics in 2013, Bruce Power has been a steadfast supporter of their mission to bring opportunities to learn practical skills in STEM, arts, and business fields to youth in our community.

With this support, Team 781 has been a frequent participant in *FIRST*® competitions in Ontario and the USA. In the past 7 years we've gone to a championship level of competition 6 times – winning several high level awards and regional competitions along the way. More than our competitive success, we've been focused on providing our members with the skills they need to succeed in the modern workplace.

## *In Support of Bruce Power's Licence Renewal*

Team 781 has always been proud to be partnered with Bruce Power, and fully supports their application for licence renewal for three important reasons:

1. Their commitment to safety
2. Their help in growing students who are comfortable in Science, Technology, Engineering, and Math (STEM)
3. Their community support

### **Bruce Power's Commitment to Safety**

At the local team level, Bruce Power mentors and volunteers promote the importance of safety as students learn to use shop tools and machinery. Constant reinforcement of wearing personal protective equipment, using tools properly, stopping when unsure, having back up plans and being aware of hazards builds a culture of safety on the team.

More broadly, Bruce Power worked with the team in the early days of the Canadian *FIRST*® program to help create an Industrial Safety Award which was given out to a team that demonstrates a strong safety culture at a Canadian Regional competition. Since that day, the award has spread and is now part of every competition worldwide reaching over 3,000 teams and 50,000 students.

### **Bruce Power's Community Support**

As a team, we believe it is important that all students should be able to participate and benefit from this program, no matter their economic status. Our partnership with Bruce Power allows us to make this possible. As a result of the annual donations made by Bruce Power to Team 781, we have been able to involve hundreds of students over the past 17 years in this amazing experience.

Bruce Power's donation is further leveraged as the team then goes on to support the larger community in variety of ways. In the past four years, Team 781 has been able to help out at the following events:

- Organize and operate the Kincardine FLL Tournament Mentoring FLL robotics teams at Huron Heights and St Anthony's
- Disposing of remains from the Kincardine Lions Garage Sale
- Fundraising at Kincardine Relay for Life
- Staffing water stations at Kincardine Terry Fox Run
- Staffing water stations at Kincardine Scottish Festival
- Picking up litter for the Lions Highway Clean-up
- Barricades at the Kincardine Santa Claus parade

Further, over the last four years Team 781 has been able to demonstrate their robot or give presentations at the following events:

- Bruce Power Beach Party in Kincardine and Port Elgin Bruce Power Information Centre March Break Activities
- Kincardine Multi-cultural Night
- Kincardine Town and Township Public School Fun Fair
- Kincardine Cruise Nights
- Kincardine and Port Elgin CIBC BBQ
- Kincardine Youth Organization Demonstration Night
- Kincardine (Rogers) Cable TV
- Kincardine MyFM radio
- Bluewater District School Board Professional Development Day
- Ripley Fall Fair
- Owen Sound Rotary Conference
- 2017 Hanover Sights and Sounds Festival
- 2017 Owen Sound Rocking Horse Store Anniversary
- 2017 International Plowing Match (near Blyth)

Even further, our team awards Grade 8 students who show a passion for STEM by providing them with an “Engineering Inspiration Award”. These are provided to students in the local elementary schools (St Anthony's, Huron Heights, KTTPS and Ripley elementary schools).

## **Bruce Power’s Help in Promoting Science, Technology, Engineering, and Math (STEM)**

Not only does Bruce Power provide monetary support, many of the team’s mentors are either employees or retirees from Bruce Power. Through their involvement, the students learn to apply concepts they learn in the classroom to real life problems. In designing and building a robot to compete every year, while maintaining the logistics that support the endeavour, students engage in problem solving and decision making. The impact of their decisions can be witnessed in the product that is produced and the performance of the team by the end of the season.

At a competition a few years ago, Dr. Woodie Flowers, professor emeritis in Mechanical engineering at the Massachusetts Institute of Technology, and a co-founder of *FIRST*® robotics, stated that one of the critical skills that we need as a society is the ability to make fact based decisions. At the same time as being sympathetic and understanding of the feelings of others, we need to be able to look at facts, solve problems, and make decisions rationally. Lately – this message has been reinforced, and is seemingly ever more important.

The education students get by being on the team and getting mentorship from STEM professionals helps grow the future leaders of our society.

# What All This Means to Team 781

## Team 781's Impact

FIRST® Robotics goes beyond building robots; it acts as an important learning opportunity for all members. Without support from our partners like Bruce Power, this learning would not be possible.

“FIRST inspires us students to work together and to be the leaders of tomorrow. If it wasn't for this program, I wouldn't have the skills I have today.”

- Alex Pierce, 2018 Admin Captain

“To me, robotics is an opportunity for high school students to be exposed to and get experience in fields of science, technology, engineering, arts, and math prior to entering the workforce or pursuing further education. It helps students realize their passions and sparks the creators of tomorrow.”

- Matt Venner, 2018 Build Captain

Some of the real impact of FIRST can be seen by reaching out to an alumni member and asking them how their current lives have been affected by their history with FIRST.

“Being a Kinetic Knight has taught me many useful technical and soft skills. Leaving my comfort zone and taking on leadership roles during my time on the team turned my shy, grade 9 self, into a much more outgoing and motivated person. My design and programming experience from Team 781 has allowed me to perform exceptionally well in my design and programming courses, boosting my GPA and allowing me to focus on other subjects.”

- Jed Gonzales, McMaster University, Engineering

Our late Lead mentor summarized the lessons beyond STEM that we as an organization endeavour to impart as follows:

“Treat others with respect, help others when you can, work together, support each other”

- Richard Yun

## Future

Team 781 has grown to be a sustainable organization which creates an enriched learning environment for students, the majority of which go on to pursue post-secondary education, and all of whom do so with practical experience in their fields of interest thanks to this program.

Bruce Power's regional economic development and innovation initiative has indirectly benefited our organization to date, and will continue to do so in the future. So far, approximately twenty-two new companies have established local offices in our area or have committed to do so. These organizations are a larger source of funds, services, tools, equipment and knowledgeable mentors to inspire our students. For example, Superheat showed our students how they heat treat equipment around the world. Areva donated materials and services to install power supplies with emergency stop buttons in our build space.

With a successful application by Bruce Power for licence renewal, the number of companies drawn to the region will continue to climb. Team 781 hopes to make partnerships with these new companies, expanding the support they will be able to provide to the community and the students within it for years to come.

Based on their continuous demonstration of safe operation, sound community stewardship, and their willingness to always go the extra mile - we support Bruce Power's application for a 10 year Operating licence.



Kinetic Knights Robotics  
Team 781  
CNSC Intervention

Bruce Power Licence Renewal

# The Team

- Robotics team from Kincardine, Ontario
- Founded by Bruce Power, and now overseen by a registered charitable organization: Kinetic Knights Robotics
- Competing in the *FIRST*<sup>®</sup> Robotics Competition (FRC) since 2001
- In the past 7 years, Team 781 has been invited to the world championship 6 times
- Won high level awards and regional competitions along the way
- Focused on providing members with skills needed to succeed in the modern workplace

# *In Support of Bruce Power's Licence Renewal*

## COMMITMENT TO SAFETY

- Students learn the importance of safe work practices
- Learn how to properly use shop tools and machinery; reinforcement of wearing personal protective equipment (PPE)
- Reinforcing the culture of safety on the team through the development of hazard awareness

## COMMUNITY SUPPORT

- All students in the community receive equal opportunity and participation from the program, regardless of economic status
- In a large part due to past annual Bruce Power donations to Team 781, over one hundred students have been involved over the past 17 years
- Donations have allowed for the team to support the larger community through participation in various charity and community events

## PROMOTION OF STEM

- Aside from monetary support, involvement from retirees and employees of Bruce Power assist students in applying concepts to real life problems.
- Program is designed to engage and develop problem solving, leadership, and decision making skills

# *Team 781's Community Participation*

Thanks in a large part to Bruce Power's consistent support, below is a list of some of the events Team 781 has been able to organize or participate in over the last 4 years

## **Volunteered**

- Organize and operate the Kincardine FLL Tournament
- Mentoring FLL robotics teams at Huron Heights and St Anthony's
- Disposing of remains from the Kincardine Lions Garage Sale
- Fundraising at Kincardine Relay for Life
- Staffing water stations at Kincardine Terry Fox Run
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- Barricades at the Kincardine Santa Claus parade

## **Showcased**

- Bruce Power Beach Party in Kincardine and Port Elgin
- Bruce Power Information Centre March Break Activities
- Kincardine Multi-cultural Night
- Kincardine Town and Township Public School Fun Fair
- Kincardine Cruise Nights
- Kincardine and Port Elgin CIBC BBQ
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- Matt Venner, 2018 Build Captain

# Team 781's Future

- Based on their continuous demonstration of safe operation, sound community stewardship, and their willingness to always go the extra mile - we support their application for a 10 year Operating licence
- Team 781 has grown to be a sustainable organization which creates an enriched learning environment for students, the majority of whom pursue post-secondary education
- A successful licence renewal will allow Bruce Power to support our organization and many others for years to come