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16. Abstract <p>A recent Southwest University Transportation Center (SWUTC) project entitled Go! Girl! provided standing room only participation for the career workshops and activities it presented. The number of agencies, schools and universities offering support for the program and requesting a program in their area could not be accommodated in a the time frame of a one-year grant. The need for middle school programs that explore career activities became increasingly evident as the project progressed.</p> <p>The concept for <i>On the Move!</i> originated from success of <i>Go Girl!</i>. The team wanted to examine if the same type of program could be applied for both boys and girls and whether those activities would be received with the same enthusiasm. The goal of <i>On the Move!</i> was to create one day events that encouraged students' interest in STEM areas and transportation careers. It was also important that the event could be easily replicated for future use.</p> <p>A total of eight separate events were piloted to diverse audiences across Texas. Each event created using a slightly different approach for sparking students' interest in STEM. All of the events were produced at a cost of less than \$1,000 and all of the events were well attended and well received. A total of 1,175 students participated in the initial <i>On the Move!</i> outreach events and over 3,400 other students were reached through <i>On the Move!</i> career fair and science night events. Almost all of these events have continued to be replicated through other funding sources.</p>		13. Type of Report and Period Covered Technical Report	
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***ON THE MOVE!***  
**EXPLORING TRANSPORTATION CAREER HORIZONS**

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## ABSTRACT

A recent Southwest University Transportation Center (SWUTC) project entitled Go! Girl! provided standing room only participation for the career workshops and activities it presented. The number of agencies, schools and universities offering support for the program and requesting a program in their area could not be accommodated in a the time frame of a one-year grant. The need for middle school programs that explore career activities became increasingly evident as the project progressed.

The concept for *On the Move!* originated from success of *Go Girl!*. The team wanted to examine if the same type of program could be applied for both boys and girls and whether those activities would be received with the same enthusiasm. The goal of *On the Move!* was to create one day events that encouraged students' interest in STEM areas and transportation careers. It was also important that the event could be easily replicated for future use.

A total of eight separate events were piloted to diverse audiences across Texas. Each event created using a slightly different approach for sparking students' interest in STEM. All of the events were produced at a cost of less than \$1,000 and all of the events were well attended and well received. A total of 1,175 students participated in the initial *On the Move!* outreach events and over 3,400 other students were reached through *On the Move!* career fair and science night events. Almost all of these events have continued to be replicated through other funding sources.



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A special section in each chapter will address participation and acknowledgment of the many contributors who made the success of the individual *On the Move!* events possible.





## **DISCLAIMER**

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# 1.0 INTRODUCTION

## 1.1 OVERVIEW

The transportation engineering profession, like every other profession that relies heavily on the engineering, technology and science fields, faces a challenging future. A recent study by the National Science Board reported a troubling decline in the number of U.S. citizens that are training to become scientists and engineers. The study showed that while more than half of the science and engineering degree holders are age 40 or older, the number of students entering college degree programs in these disciplines have declined. In short, the current and future success of the transportation infrastructure and its diverse array of components depend on developing a large cadre of individuals, both male and female, to design, plan, manage, operate, and maintain the vast infrastructure in place.

A recent Southwest University Transportation Center (SWUTC) project (1) entitled Go! Girl! provided standing room only participation for the career workshops and activities it developed. The number of agencies, schools and universities offering support for the program and requesting a program in their area could not be accommodated in a the time frame of a one-year grant. The need for middle school programs that explore career activities became increasingly evident as the project progressed.

Studies by numerous educational entities have reported that grade levels 5 through 9 are the crucial time in exploring career opportunities. Researchers have recommended that career exploration and awareness begin before high school, when students have already made major decisions about courses (2). These studies found in many cases, students passively follow career paths simply by not choosing from their high school curriculum options the courses needed for technical or other careers. By creating opportunities for career awareness in middle school, students are able to pursue high school curriculum choices that are appropriate for the career path.

## 1.2 STUDY OBJECTIVES

The main objective of this project was to develop a one day workshop and event for students and student groups grade levels 5 through 9 that offers an opportunity to gain hands on experience and insight into what transportation, engineering, and technology careers have to offer. The ideal event for this project:

- Provides experiences to encourage interests in engineering, science, and math,
- Offers exposure and mentoring from role models that currently work in the transportation fields,
- Provides a venue that allows students to recognize their interests in math and have an early successful experience, two of the crucial factors to encourage careers in technology and engineering are fulfilled, and finally

- Be designed in a format so that it could be used as a prototype that could be used by any college or university or professional organization.

### **1.3 REPORT FORMAT**

This report begins with an introduction chapter followed by a networking chapter that discusses the importance of collaboration in producing successful events. Each subsequent chapter details an event created during the *On the Move!* project. The chapter will include a detailed list of partners, event modules, and subsequent feedback received from the participants. The report will close with a summary and conclusions chapter.

### **1.4. REFERENCES**

1. D. Jasek and M. Finley, *Go Girl! Facilitating Exploration of Transportation Careers for Girls*, Report SWUTC/07/167459-1, Southwest Region University Transportation Center, Texas Transportation Institute, Texas A&M University System, College Station, Texas, July 2007.
2. M.Castellano, S. Stringfield, and J. R. Stone, III, *Helping Disadvantaged Youth Succeed in School: Second Year Findings From a Longitudinal Study of CTE-Based Whole-School Reforms*, National Dissemination Center for Career and Technical Education, Columbus, OH, March 2002.

## 2.0 NETWORKING: A FORMULA FOR COLLABORATION

Early in the *On the Move!* project, the research team was able to form a network of supporters from earlier collaborations and networking. This network of supporters enhanced the capability of the team to conduct quality events in a number of highly desirable venues, forge new alliances, and create long term partnerships for outreach.

Foremost in the networking aspect of the study was the opportunity provided by the University of North Texas and the South Central Girls Collaborative (SCGC). The University of North Texas was awarded a grant through the auspices of the National Science Foundation. This grant created the SCGC, which is dedicated to supporting girls' endeavors in science, technology, engineering, and mathematics (STEM). SCGCP extends the success of the National Girls Collaborative Project to Texas and the surrounding states. The collaborative goals are to connect existing organizations to maximize access to shared resources within projects, and with public and private sector organizations and institutions interested in expanding girls' participation in STEM and to strengthen capacity by sharing research and program models, outcomes, and products. The collaboration with the SCGCP during the *Go Girl!* project formed a basis for much of the support in *On the Move!*

A solid partnership with the Harris County After School Enrichment (CASE) program was also a crucial component to the success of the Houston event for *On the Move!* CASE personnel and teachers provided the educational expertise for the program, and graciously converted the modules to align with the Texas Educational Knowledge and Skills (TEKS) guidelines for grade level.

A new partnership with the Gulf of Mexico Foundation was initiated through work on the Tidehaven *On the Move!* event. The Gulf of Mexico Foundation, a nonprofit corporation based in Corpus Christi, Texas, was founded in 1990 by citizens concerned with the health and productivity of the Gulf of Mexico. The foundation represents a wide range of interests (agriculture, business, fisheries, industry, tourism, and the environment). Members of the foundation work to promote and fund research, education, and conservation programs. The focus for the Foundation encompasses all areas that border the Gulf – Texas, Louisiana, Mississippi, Alabama, Florida, Mexico, Cuba, and the adjacent Caribbean.

A continuing strong partnership with the Dallas Area Rapid Transit allowed project team members to design transit and multimodal based events in the Dallas area. Their willingness to provide time, items for goody bags and provide information and counsel to the project team was invaluable.





### **3.0 BANQUETTE ON THE MOVE!**

**EVENT DATE:** November 28, 2006

**EVENT LOCATION:** Banquette Junior High School, Banquette, Texas

**TARGET GROUP:** 6<sup>h</sup> through 8<sup>th</sup> Grade at Risk Students at Banquette Junior High School

**NUMBER OF PARTICIPANTS:** 28

**CONTRIBUTORS:** Texas A&M University Kingsville, Texas Department of Transportation (TxDOT), and the American Society of Civil Engineers (ASCE), Banquette Independent School District (ISD)

#### **THE EVENT:**

Banquette Junior High School has an after-school educational program from 3:00 p.m. to 4:30 p.m. that is geared to improving mathematics and science scores for at risk students. The *On the Move!* event hosted by Banquette ISD was designed to provide a program of interactive modules that would provide a visual understanding of mathematics as well as encourage teamwork. The majority of the modules selected were designed by ASCE for *Zoom into Engineering*, and the Science Olympiad. The event also provided introductory training for selected teachers in utilizing the ASCE modules.

Students were divided into teams of four and participated in 4 team building modules. These modules included: building a Puff powered Vehicle, constructing a Straw Tower, Sign the Way (a SWUTC designed module that teaches road sign recognition), and Write it Do It (a Science Olympiad competition that teaches giving and following written instructions).

#### **ASSESSMENT OF EVENT**

This event was deemed a success by both teachers and students. Some students became so engrossed with the activities that they stayed beyond the allotted time for the event. One student remarked that he wished that mathematics was always this much fun. Teachers were encouraged by the enthusiasm exhibited by their students and requested instruction on additional modules. This instruction was provided at a later date by the project team. A follow-up meeting and correspondence with teachers has found that the Banquette teachers have continued to incorporate the modules in their curriculum.



## 4.0 TIDEHAVEN ON THE MOVE!

**EVENT DATE:** February 27, 2007

**EVENT LOCATION:** Tidehaven High School, El Maton, Texas

**TARGET GROUP:** Junior High and High School Science and Mathematic Students

**NUMBER OF PARTICIPANTS:** 400

**CONTRIBUTORS:** Tidehaven ISD, the Texas Transportation Institute, the Gulf of Mexico Foundation, South Texas Project, TxDOT, Victoria College, Texas A&M University Corpus-Christi, Texas Parks and Wildlife, the Nature Conservancy, Texas A&M College Station, Lower Colorado River Authority, Victor and Barbara Corporan Farms, Texas State Technical College, Boling ISD, and Van Vleck ISD.

### **THE EVENT:**

When the project team first discussed the possibility of hosting an *On the Move!* event at Tidehaven ISD, Ms. Boyett, the high school principal, suggested meeting with the education program manager for the Gulf of Mexico Foundation (GMF) in Port Aransas, who was interested in hosting a similar event. After meeting with the GMF educational program manager, it was decided that the *On the Move!* event would become a part of a larger weeklong event known as **EcoEco Week**. EcoEco Week is an event for junior high and high school students that reside in coastal counties. The event introduces them to the importance of the Gulf of Mexico ecology and local industry in their lives. It also emphasizes personal and corporate obligations to both the community and environment. The event includes field trips to local industry, meetings with community leaders, a beach cleanup, and a career exploration day, which is the *On the Move!* portion of EcoEco week.

The career exploration day, also known as Math and Science in the Real World, shines the spotlight on industries, companies, and agencies whose work requires a firm STEM grounding. All of the corporate partners contacted for participation were from Matagorda or adjacent counties. These corporate partners are invited to the school to set up booths and exhibits that show how math and science are used in the “real world” to make a difference and to help answer the age old question of “Why do I need to learn this?” By keeping the focus on local corporate partners, students were often familiar with the industry and in some instances the participating personnel included parents and relatives. As one student later remarked, “Before today, I did not understand what my uncle did!”

The Tidehaven ISD EcoEco week was set for February 21-27, 2007. It was decided that Tuesday, February 27, 2007 would be the date for Math and Science in the Real World. Thirteen corporate partners agreed to set up exhibits at the Tidehaven High School gymnasium. Those partners were:

- Texas Transportation Institute,
- TxDOT Yoakum District Office,
- TxDOT Wharton Area Office,
- South Texas Project Nuclear Power Plant,
- Victoria College Process Technology Program,
- Texas A&M Corpus-Christi School of Nursing,
- Texas Parks and Wildlife Matagorda Area Game Wardens,
- The Nature Conservancy Clive Runnells Family Mad Island Marsh Preserve,
- Texas A&M University R.V. Karma Floating Classroom.
- The Lower Colorado River Authority (LCRA),
- Victor and Barbara Corporan Catfish Farm, and
- The Texas State Technical College Diesel Mechanics Program.

Exhibits topics covered a wide range of topics and areas of interest. They included:

- Information on the construction of a new bridge over the Intracoastal Waterway at Matagorda,
- The composition of asphalt and concrete,
- The anatomy of a diesel engine,
- Computer technology in fish farming,
- What is a process engineer,
- How is nuclear energy made,
- Signs on the roadway,
- Locks and Dams and their operation,
- Marine Biology of Matagorda Bay,
- Mapping the Gulf of Mexico,
- How to age an alligator using mathematics, and
- How to take blood pressure and your pulse

As planning for the event progressed, two other area school districts expressed a desire to participate in the event. Boling ISD from Wharton County, and Van Vleck ISD from eastern Matagorda County, requested permission to send students from science classes at their respective junior high and high schools to attend the event.

On the day of the event over 400 students from Tidehaven High School, Tidehaven Junior High School, Boling High School, Van Vleck Junior High School, and Van Vleck High School attended the 6 hour event. The South Texas Project provided

lunches for the traveling students and the corporate partners and the Blessing Grocery (a local store and bakery) provided breakfast and snacks.

## **ASSESSMENT OF EVENT**

This event proved to be one of the most popular programs created by *On the Move!* The after action responses by corporate participants, schools, and students were extremely positive. Student remarks included surprise at the level of mathematics and science that were required for everyday businesses, and well as excitement about being able to explore new career opportunities at local industries.

## **UPDATE**

Planning for a follow-on event in an attempt to duplicate the success in another location was almost immediately begun by the SWUTC project team and The Gulf of Mexico Foundation. This event, which was held in Ingleside, is documented in a later section.

The Gulf of Mexico Foundation also began to explore grant opportunities for future funding for similar events. In late fall of 2007, the Foundation was awarded a grant by Texas General Land Office that will fund 5 events in the 2008-2009 school year. Tentatively these events are planned for Port Isabel, Port Aransas, San Patricio County, Calhoun County, and Jackson County. The South Texas Project has also agreed to take a corporate leadership role in future events. Plans are also underway to seek long term Federal funding that will allow the event to be replicated in Louisiana, Mississippi, Alabama, and Puerto Rico.



## **5.0 NORTH TEXAS GIRL SCOUT COUNCIL ON THE MOVE! EVENT 1**

**EVENT DATE:** March 17, 2007

**EVENT LOCATION:** Dallas

**TARGET GROUP:** 3<sup>rd</sup> and 4<sup>th</sup> Grade Girl Scouts

**NUMBER OF PARTICIPANTS:** 62

**CONTRIBUTORS:** North Texas Girl Scout Council, DART, Texas Transportation Institute, Texas Department of Transportation

### **THE EVENT:**

This event was the continuation of a plan created in *Go Girl!* for a Girl Scout/Brownie/Daisy Council Badge initiated in 2006. The project team, DART, and the North Texas (then Tejas) Girl Scout Council created a Girl Scout Council Badge about transportation. The Badge called Girls on the Move was conceived as a troop level activity that would cover local and regional transportation and transit

The first phase of the badge requirement involves the learning about transportation in their community. This phase is conducted during a troop meeting and includes reading news articles, web articles, and books about transportation, transit, and transportation history. The second phase of the badge requirement is be a learning field trip to Dallas and is led by personnel from TTI and DART.

The field trip for the Girls on the Move Badge was held on Saturday, March 17, 2007. Sixty-two Brownies and Girls Scouts attended the field trip event. The Troop was accompanied by 14 Scout leaders, TTI project personnel, and a DART outreach representative. The field trip consisted of riding the light rail, a transportation identification game, and a ride on the historic McKinney Avenue Trolley.

### **Light Rail and Rail**

The group met at the Mockingbird Transit and Light Rail Station. After an early lunch and a safety briefing from DART and TTI personnel about riding the light rail, the group road the light rail to Union Station. The group toured the station and viewed the departure of the Trinity Express Rail (TRE) and the arrival of Amtrak. The TRE commuter train connects the downtown areas of Dallas and Fort Worth, with stops in the Mid-Cities and DFW International Airport. The Texas Eagle is the Amtrak rail service that travels daily through Dallas. The Texas Eagle travels from Chicago to San Antonio.

## **Transportation Game**

After leaving Union Station the group walked to the Hyatt Hotel and Reunion Tower. The group then discussed the historical transportation photos posted in the hallway that connects the station to the Hyatt. The group then took the elevators to the top of Reunion Tower. There the girls completed a hunt for transportation objects visible from the Tower. The girls were required to find a railroad bridge, a spaghetti bowl (interchange), a bus stop, a parking lot, a highway bridge, a river, a swimming pool on a roof, the Cotton Bowl, and the American Airlines Center.

## **Historic Trolley Ride**

The group reassembled at Union Station and took the light rail to St. Paul station, where they walked the short distance to the Dallas Art Museum. The group then caught the historic McKinney Avenue Trolley to City Place. The McKinney Avenue Trolley car ridden by the group was the Number 186 also known as the Green Dragon. The Green Dragon was built in 1913. The girls watched the trolley operator “switch the poles,” thus allowing him to change the direction the trolley would travel and then helped him “flip the seats” before riding the Trolley. After the group arrived a City Place, the caught the light rail back to Mockingbird Station.

## **ASSESSMENT OF EVENT**

The evaluation by both Girl Scouts and Troop leaders was for the most part very positive. Some of the younger girls were tired before the end of the trip. The field trip was also scheduled on St. Patrick’s Day. Dallas has a large parade down Greenville Avenue, which is very close to Mockingbird Station. This special event caused a large amount of ridership on the light rail and therefore crowded conditions. It was recommended by DART and TTI that future events, not coincide with special events. This will maintain the quality of the experience for the girls.



## **6.0 SOUTH TEXAS CAREER FAIR ON THE MOVE! EVENTS**

**EVENT DATE:** March 29, 2007 and March 30, 2007

**EVENT LOCATION:** Robstown and Kingsville

**TARGET GROUP:** 7<sup>th</sup> through 12<sup>th</sup> grade

**NUMBER OF PARTICIPANTS:** 3,000 plus

**CONTRIBUTORS:** Not Applicable

### **THE EVENT:**

These two *On the Move!* events were dissimilar from other events, in that the project team participated in an ongoing science night and career fair with a table and activities specifically targeting girls attending the event. Each year Robstown Independent School District (ISD) hosts a night specifically geared towards STEM. The school invites agencies and area businesses and corporations to set up activities and booths that illustrate how STEM is used in that particular business in “real world” situations. Over 200 students and their families attended the career night.

This night is open to all Robstown ISD students and their parents, but specifically targets junior high and high school students. The *On the Move!* team was invited to participate in the science night activities. The *On the Move!* team created a booth on how math and science is used in transportation that also featured careers in transportation.

This booth was also used the next day at the South Texas Career Fair and Science Exposition. This annual event is sponsored by Riviera ISD and is held at the Kingsville Convention Center. The South Texas Career EXPO differs from a traditional "College Day" program. The program involves a hands-on, browse format for specific career disciplines in which actual instructors, business or industry personnel, present demonstrations on what their industry does and the careers available in that industry. The goal is to provide a more comprehensive overview of the required course work and future career opportunities. Presenters who bring actual equipment and resources to demonstrate are extremely successful in attracting students to their program. Over 100 booths were set up for the EXPO and 29 schools brought over 3,100 students attended the EXPO.

### **ASSESSMENT OF EVENT**

These particular events were not evaluated in the traditional sense, as no evaluations were completed by participants that visited the booths at the career expos. However, a large number of students did visit the booth and pick up material regarding career choices. Over 1,000 pamphlets on transportation careers were distributed during

the 2 day event. A number of discussions were held regarding careers in transportation and their broadening roles in technology careers in the future.

## 7.0 HOUSTON ON THE MOVE! EVENT

**EVENT DATE:** May 3, 2007

**EVENT LOCATION:** Houston, Texas

**TARGET GROUP:** 4<sup>th</sup> Graders from participating Harris County After School Enrichment (CASE) programs

**NUMBER OF PARTICIPANTS:** 175 students from 9 different schools

**CONTRIBUTORS:** Texas Transportation Institute, Harris CASE, Federal Aviation Administration Southwest Region, ASCE, Continental Airlines, and AmeriCorp volunteers

### **THE EVENT:**

SWUTC project team members and leaders from the Harris CASE met in early September 2006 to design a program for students in the after school enrichment program. It was decided to target aviation as the transportation mode and Continental Airlines agreed to become a corporate partner for this event. It was decided that the event would be a semester long exploration of aviation by students in the 4<sup>th</sup> grade level of the program. The culmination would be a field trip by light rail to Continental Headquarters in downtown Houston.

Phase one of this event began in October 2006 with a workshop for participating teachers and AmeriCorp volunteers. The workshop conducted by the SWUTC project team and Harris CASE leaders provided activities and guidance for the semester long exploration of aviation. The Southwest Region FAA Office provided some age appropriate materials and videos that examined the past century of flight. Materials from the ASCE *Zoom into* Engineering, outreach program were also provided to teachers during the workshop. Teachers and Americorp volunteers began the aviation event in January 2007.

On the morning of May 3, 2007, participating students and teachers met at the Fannin South Park and Ride. Over 175 students, 20 teachers and AmeriCorp volunteers, and 10 Harris CASE and SWUTC team members were participated in the field trip. The trip began with a safety briefing and a briefing on how to purchase tickets for the rail. Students were then divided into groups and traveled to downtown Houston. After arriving at the Downtown Transit Center, the groups walked two blocks to the Continental Airline Headquarters Building.

The groups were met by Continental Airlines representatives and escorted to a large meeting room. There the students and teachers were welcomed by Mr. Larry

Kellner, Chairman of Continental Airlines, and a number of pilots, first officers, flight attendants, and safety engineers. Students were treated to stories, hands-on demonstrations, and question and answer sessions with the Continental Crews and flight personnel. After the demonstrations, the groups were treated to lunch graciously provided by Continental Airlines. Once lunch was over the groups divided into school teams and competed in a Transportation Olympics. This hands-on competition tested the teamwork and math skills of the contestants. The winners were awarded certificates and medals provided by the Texas Transportation Institute. After the competition, groups traveled by light rail back to the Fannin South Park and Ride.

### **ASSESSMENT OF EVENT**

This event was very well received by both students and teachers. The teachers were enthusiastic about the learning activities provided by FAA and ASCE. The students that participated in the evaluation of the event indicated that they enjoyed all aspects of the learning experience.

### **UPDATE**

Because of the popularity of this event the Harris CASE team members decided that the event should be scheduled as a feature event once again for the 2007-2008 school year. The event was budgeted for and Continental Airlines also agreed to provide funds as a major sponsor. The second annual event was hosted on May 2, 2008.

## **8.0 NORTH TEXAS GIRL SCOUT COUNCIL ON THE MOVE! EVENT 2**

**EVENT DATE:** May 19, 2007

**EVENT LOCATION:** Dallas

**TARGET GROUP:** 3<sup>rd</sup> and 4<sup>th</sup> Grade Girl Scouts

**NUMBER OF PARTICIPANTS:** 32

**CONTRIBUTORS:** North Texas Girl Scout Council, DART, Texas Transportation Institute, Texas Department of Transportation, Museum of the American Railroad, Tyler Police Department

### **THE EVENT:**

This event was the continuation of a plan created in *Go Girl!* for a Girl Scout/Brownie/Daisy Council Badge initiated in 2006. The project team, DART, and the Tejas Girl Scout Council created a Girl Scout Council Badge about transportation. The Badge called Girls on the Move was conceived as a troop level activity that would cover local and regional transportation and transit. This event was the first attempt at making the badge a regional badge with a Troop of Girl Scouts from Tyler. This Troop is comprised of at risk girls and is sponsored by the Tyler Police Department.

The first phase of the badge requirement involves the learning about transportation in their community. This phase is conducted during a troop meeting and includes reading news articles, web articles, and books about transportation, transit, and transportation history. The second phase of the badge requirement is be a learning field trip to Dallas and is led by personnel from TTI and DART.

The field trip for the Girls on the Move Badge was held on Saturday, March 17, 2007. Thirty-two Brownies and Girls Scouts attended the field trip event. The Troop was accompanied by 4 Scout leaders, TTI project personnel, and a DART outreach representative. The field trip consisted of riding the light rail, a transportation identification game, a ride on the historic McKinney Avenue Trolley, and a tour of the Museum of the American Railroad.

### **Light Rail and Rail**

The group met at the Mockingbird Transit and Light Rail Station. After an early lunch and a safety briefing from DART and TTI personnel about riding the light rail, the group road the light rail to Union Station. The group toured the station and viewed the departure of the Trinity Express Rail (TRE) and the arrival of Amtrak. The TRE

commuter train connects the downtown areas of Dallas and Fort Worth, with stops in the Mid-Cities and DFW International Airport. The Texas Eagle is the Amtrak rail service that travels daily through Dallas. The Texas Eagle travels from Chicago to San Antonio.

### **Transportation Game**

After leaving Union Station the group walked to the Hyatt Hotel and Reunion Tower. The group then discussed the historical transportation photos posted in the hallway that connects the station to the Hyatt. The group then took the elevators to the top of Reunion Tower. There the girls completed a hunt for transportation objects visible from the Tower. The girls were required to find a railroad bridge, a spaghetti bowl (interchange), a bus stop, a parking lot, a highway bridge, a river, a swimming pool on a roof, the Cotton Bowl, and the American Airlines Center.

### **Historic Trolley Ride**

The group reassembled at Union Station and took the light rail to St. Paul station, where they walked the short distance to the Dallas Art Museum. The group then caught the historic McKinney Avenue Trolley to City Place. The McKinney Avenue Trolley car ridden by the group was the Number 186 also known as the Green Dragon. The Green Dragon was built in 1913. The girls watched the trolley operator “switch the poles,” thus allowing him to change the direction the trolley would travel and then helped him “flip the seats” before riding the Trolley. After the group arrived a City Place, they caught the light rail back to Mockingbird Station.

### **Museum of the American Railroad**

The group then traveled to Fair Park and toured the Museum of the American Railroad. The Museum of the American Railroad possesses one of the most comprehensive heavyweight passenger car collections in the United States, with a complete pre World War II passenger train including a Railway Post Office and baggage car, coaches, lounge cars, Pullman sleeping cars and a dining car. The museum has recently added a collection of postwar lightweight passenger equipment to complement its prewar passenger train. The museum also features a steam calliope and whistle display. After the tour the group received their badges.

### **ASSESSMENT OF EVENT**

The evaluation by both Girl Scouts and Troop leaders was for the most part very positive. However, it was noted by some that the program was just right for this group but may have to be modified for groups traveling a farther distance.

## **9.0 INGLESIDE AND PORT ARANSAS ON THE MOVE!**

**EVENT DATE:** February 19, 2008

**EVENT LOCATION:** Port Aransas High School, Port Aransas, Texas

**TARGET GROUP:** Junior High and High School Science and Mathematic Students

**NUMBER OF PARTICIPANTS:** 475

**CONTRIBUTORS:** Aransas Pass ISD, the Texas Transportation Institute, the Gulf of Mexico Foundation, South Texas Project, TxDOT, Texas A&M University Corpus-Christi, Texas Parks and Wildlife, Aransas Pass Wildlife Refuge, Texas State Technical College, Valero Refinery, Sherwin Alumina, BarCom, Naval Station Ingleside, Cheniere Energy, Shiner Moseley, LNV Engineering, Inc., and Gulf Marine Fabricators

### **THE EVENT:**

This event was held in early 2008 to establish if the success of EcoEco **Week** and the *On the Move!* event at Tidehaven ISD could be replicated. Aransas Pass and Ingleside was selected due to it's proximity to the Gulf of Mexico Foundation Headquarters.

The Aransas ISD EcoEco week was set for February 21-27, 2007. It was decided that Tuesday, February 19, 2008 would be the date for Math and Science in the Real World. Fifteen corporate partners agreed to set up exhibits at the Aransas Pass High School gymnasium. Those partners were:

- Texas Transportation Institute,
- TxDOT Corpus Christi District Office,
- TxDOT Corpus Christi Area Office,
- South Texas Project Nuclear Power Plant,
- Texas A&M Corpus-Christi School of Nursing,
- The Texas State Technical College Diesel Mechanics Program,
- Barcom,
- Naval Station Ingleside,
- Shiner Moseley,
- Valero Refinery,
- LNV Engineering, Inc.,
- Sherwin Alumina,
- Aransas Pass National Wildlife Refuge, and
- Gulf Marine Fabricators.

Exhibits topics covered a wide range of topics and areas of interest. They included:

- The composition of asphalt and concrete,
- The anatomy of a diesel engine,
- How is nuclear energy made,
- Signs on the roadway,
- Mapping the Gulf of Mexico,
- How to age an alligator using mathematics,
- Counting snakes and other critters,
- Building a pier,
- Shipboard firefighting,
- How do you make gasoline out of crude oil,
- How to make polymers,
- Building a barge,
- Desalinization, and
- How to take blood pressure and your pulse

As planning for the event progressed, two other area school districts expressed a desire to participate in the event. Boling ISD from Wharton County, and Van Vleck ISD from eastern Matagorda County, requested permission to send students from science classes at their respective junior high and high schools to attend the event.

On the day of the event over 400 students from Tidehaven High School, Tidehaven Junior High School, Boling High School, Van Vleck Junior High School, and Van Vleck High School attended the 6 hour event. The South Texas Project provided lunches for the traveling students and the corporate partners and the Blessing Grocery (a local store and bakery) provided breakfast and snacks.

## **ASSESSMENT OF EVENT**

This event proved to be one of the most popular programs created by *On the Move!* The after action responses by corporate participants, schools, and students were extremely positive. Student remarks included surprise at the level of mathematics and science that were required for everyday businesses, and well as excitement about being able to explore new career opportunities at local industries.



## 10.0 SUMMARY AND CONCLUSIONS

The concept for *On the Move!* originated from success of a previous SWUTC project *Go Girl!*. The team wanted to examine if the same type of program could be applied for both boys and girls and whether those activities would be received with the same enthusiasm. The goal of *On the Move!* was to create one day events that encouraged students' interest in STEM areas and transportation careers. It was also important that the event could be easily replicated for future use.

### Events

A total of eight separate events were piloted to diverse audiences across Texas. Each event created using a slightly different approach for sparking students' interest in STEM. All of the events were produced at a cost of less than \$1,000 and all of the events were well attended and well received. A total of 1,175 students participated in the initial *On the Move!* outreach events and over 3,400 other students were reached through *On the Move!* career fair and science night events. Almost all of these events have continued to be replicated through other funding sources.

The most successful replication of a *On the Move!* outreach event has been the Science and Math in the Real World program that has been incorporated into the Gulf of Mexico Foundation's **EcoEco** Week along the Texas Coast. A total of 2 of these events have been held and an additional 5 programs are scheduled for the 2008-2009 school year.

### Public Response and Corporate Participation

The response and support by both public and private agencies, corporations, and individuals for the events were overwhelming. Every agency, corporation, and individual contacted provided support for the program in some manner. Volunteers, venues for events, tickets for admission, transit fares, money for lunches, giveaways for goody bags, assistance in recruiting girls to attend events, cleanup, and enthusiastic participation were only a few of the ways that help and assistance were provided. These contacts across Texas continue to remain in contact with the project team and have offered assistance on other outreach projects as a result of networking achieved during this project.

### Conclusions

The types of events conceived through this project are highly popular with students, teachers, and corporate entities. These events are easily replicated and adjusted to fit the needs of any area. They can also be produced with relatively small amounts of funding. It is important to remember in creating an event that the main objective is to create a fun and exciting event that introduces girls to role models in STEM, help them

recognize their abilities in science and math, and to expose them to transportation and engineering as career choices. Although this type of event will not solve all of the problems of the coming workforce challenges, they can create interest in fields such as science, math and engineering. Repeated exposure in informal settings such as the *On the Move!* events often do create the spark that determines whether a student will be successful in STEM and possibly choose that career path.