

# Building and Maintaining A Successful Program



# OVERVIEW

The Maintenance of:

- 1.) An Efficient Assembly Process
- 2.) A Beneficial Testing System
- 3.) A Logical Transportation Schedule
- 4.) All Mechanisms of the Racecar
- 5.) A Successful Race Team



# MAINTAINING AN EFFICIENT ASSEMBLY PROCESS

From metal...



...to machine.

# CHASSIS SHOP



**BUILDING THE  
FRAMEWORK**

# BODY HANGING

## ADDING THE AERODYNAMICS



# BODY SHOP



Adding the finishing touches to the body and making sure the car will fit NASCAR's templates.

# FINISH FAB



National Guard crew member Dave Nichols demonstrates that part of his job in finish fab is to make this window from the piece of Lexan on the right.

# FINAL ASSEMBLY



In the final stages of the assembly process, the gears, transmission, springs, brakes, suspension, electronics and engine are installed.

# A BENEFICIAL TESTING SYSTEM

Wind Tunnel

Chassis Dyno

Track Test Sessions:



- Each NASCAR Nextel Cup team is allowed five two-day tests and four one-day tests at tracks currently on the Nextel Cup schedule.
- Test sessions are used for data acquisition beyond what can be discovered in the wind tunnel or chassis dyno.
- Shock travel, RPM, steering and brakes are just a few of the elements that can be measured more closely in a test session.

# TRANSPORTATION

The National Guard transporter not only transports two National Guard Fords to the racetrack each weekend, it also serves as a portable race shop.



# A PORTABLE RACE SHOP



OFFICE



OFFICE



SPRINGS



SPRINGS



ENGINES



ENGINE AND MORE



GEARS



GEARS

# MAINTAINING AND MONITORING PROGRESS AT THE TRACK



Car Chief Bobby Bakeef checks the camber for proper wear of the tire.

Engine tuner Justin Hines, examines the spark plugs for tuning and gas mileage.



# MAINTAINING AND MONITORING PROGRESS AT THE TRACK

Team engineer Dave Winston,  
keeps track of all changes,  
communication between the teams  
and helps with race strategy during  
the race.



Tire specialist Keith Eads  
monitors all tire wear and  
tire temperatures.

# MAINTAINING AND MONITORING PROGRESS AT THE TRACK



Team owner Jack Roush, takes another look at the spark plugs.

Hines makes final engine preparations as head engine tuner Mike Messik looks on.



# MAINTAINING AND MONITORING PROGRESS AT THE TRACK



Monitoring practice in Talladega from the top of the transporter.

Discussing the most recent practice run with driver Greg Biffle.



# MAKING CHANGES AT THE TRACK



Shock specialist Alan Howard makes a shock change between practice runs.

Bakeef and mechanic Rod Bussard make a gear change between practice runs.



# NASCAR'S MAINTENANCE OF STANDARDS



The team pushes the No. 16 National Guard car through NASCAR's technical inspection.

Through the inspection process, NASCAR monitors all of the following:

- Nose and Roof Height
- Quarter Panel Height
- Weight
- Front Valance
- Side Skirts
- Tread Width
- Wheel Base
- Fender Width
- Fuel Cell Capacity

# TIME TO RACE

(WHERE IT ALL COMES TOGETHER)



**THE DRIVER:** 1998 Truck Series Rookie of the Year; 2000 Truck Series Champion; 2001 Busch Series Rookie of the Year; 2002 Busch Series Champion.

**THE CAR:** Set-up, shocks, springs, gear, aerodynamics, tires, fuel mileage and HORSEPOWER.



# TIME TO RACE

(WHERE IT ALL COMES TOGETHER)



**THE TEAM:** Hours of pit practice, days of work at the track, months of preparation and years of experience.

**THE LEADERSHIP:** Over 25 years of experience, wins, and championships.



# RESULTS



NATIONAL GUARD TEAM  
WINS GFS MARKETPLACE  
400 AT MICHIGAN  
INTERNATIONAL SPEEDWAY

YOU WIN  
SOME...

...YOU LOSE  
SOME



TRANSMISSION TROUBLE  
PLAGUES THE TEAM AT  
CALIFORNIA SPEEDWAY

# MAINTAINING QUALITY...



-After each race the engines are dismantled, inspected and rebuilt.

- Valve springs, valves, cam shafts, push rods, pistons, bearings, gasket seals and all belts are replaced every week.

-Engine blocks are replaced every five races or 2,500 miles; crank shafts are replaced every two races and connecting rods are replaced every other race.



# ... AND TEAMWORK.



The National Guard team's desire to maintain excellence at every racetrack is paralleled only by the National Guard's desire to maintain excellence in every mission, no matter how big or small.