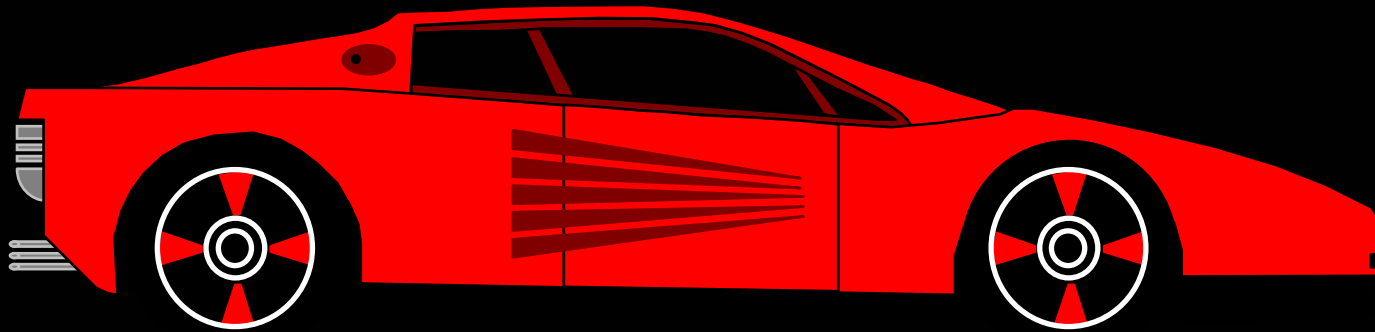


VEHICLE EXTRICATION



VEHICLE RESCUE OPERATIONS



- **PREPARATION**
 - UNDERSTAND THE PROBLEMS ASSOCIATED WITH AN MVA
 - PREPARE THE APPARATUS FOR VEHICLE RESCUE OPERATIONS

VEHICLE RESCUE OPERATIONS



- **RESPONSE**
 - RECEIVE THE ALARM
 - TRAVEL TIME
 - PARK SAFELY AT THE SCENE
 - PARK WHERE TOOLS ARE ACCESSABLE

VEHICLE RESCUE OPERATIONS



- **ASSESSMENT**
 - DETERMINE WHAT HAS HAPPENED
 - LOCATE HAZARDS ENDANGERING LIFE AND PROPERTY
 - LOCATE PROBLEMS IN GAINING ACCESS AND DISENTANGLEMENT
 - DETERMINE IMMEDIATE EMERGENCY CARE
 - LOCATE ALL VICTIMS

VEHICLE RESCUE OPERATIONS



- **ASSESSMENT**
 - CONSIDER ON THE SCENE CAPABILITIES
 - REQUEST ADDITIONAL RESOURCES
 - ASSIGN PERSONNEL

VEHICLE RESCUE OPERATIONS



- **SAFETY / HAZARD CONTROL**
 - **SCENE**
 - TRAFFIC
 - UTILITIES
 - LEAKING FLUIDS
 - UNSTABLE VEHICLES

VEHICLE RESCUE OPERATIONS



- **SAFETY / HAZARD CONTROL**
 - **HAZARD BAG**
 - LEAKING FLUIDS (BAKING SODA, GOLF TEES, PLUG 'N DIKE)
 - DISCONNECT BATTERIES (SHAVING CREAM)
 - GAS DETECTION
 - VICTIM PROTECTION
 - RUBBER GLOVES
 - ASSORTED TOOLS
 - DUCT TAPE

VEHICLE RESCUE OPERATIONS



- **SAFETY / HAZARD CONTROL**
 - **RESCUER P.P.E.**
 - HELMET WITH EYE PROTECTION
 - LEATHER GLOVES
 - LATEX GLOVES
 - BUNKER COAT & PANTS
 - BOOTS WITH STEEL TOE
 - HOOD

VEHICLE RESCUE OPERATIONS



- **SAFETY / HAZARD CONTROL**
 - **RESCUER SAFETY**
 - PROPER BODY MECHANICS
 - LIFTING
 - LOWERING
 - HOLDING
 - MOVING

VEHICLE RESCUE OPERATIONS



- **SAFETY / HAZARD CONTROL**
 - **RESCUER SAFETY**
 - WORK ON THE OUTSIDE OF THE TOOL
 - KEEP HANDS OUT OF THE WORKING PARTS OF THE TOOL
 - ONE PERSON OPERATES THE EQUIPMENT
 - ROTATE FATIGUED RESCUERS
 - NEVER REST THE TOOL AGAINST THE BODY (STORED FORCES CAN DEVELOP)
 - LET THE TOOLS DO THE WORK

VEHICLE RESCUE OPERATIONS



- **SUPPORT OPERATIONS**
 - CONTINUE TRAFFIC CONTROL
 - PROTECT VICTIMS
 - PROVIDE POWER AND LIGHT
 - PROTECT PERSONAL PROPERTY
 - PRESERVE EVIDENCE

VEHICLE RESCUE OPERATIONS



- **GAINING ACCESS**
 - DETERMINE IF PEOPLE ARE TRAPPED
 - DETERMINE THE BEST ACCESS ROUTE
 - ATTEMPT ACCESS THROUGH DOORS
 - ATTEMPT ACCESS THROUGH WINDOWS
 - GAIN ACCESS THROUGH THE VEHICLE BODY

VEHICLE RESCUE OPERATIONS



- **EMERGENCY CARE**
 - INITIATE LIFE SAVING EFFORTS
 - PRIMARY SURVEY
 - SECONDARY SURVEY

VEHICLE RESCUE OPERATIONS



- **DISENTANGLEMENT**
 - MAKE A PATH THROUGH THE WRECKAGE
 - REMOVE WRECKAGE FROM THE VICTIM

VEHICLE RESCUE OPERATIONS



- **REMOVAL AND TRANSFER**
 - PACKAGE THE PATIENT FOR REMOVAL
 - REMOVE THE PERSON FROM THE WRECKAGE
 - TRANSFER THE PATIENT TO THE AMBULANCE

VEHICLE RESCUE OPERATIONS



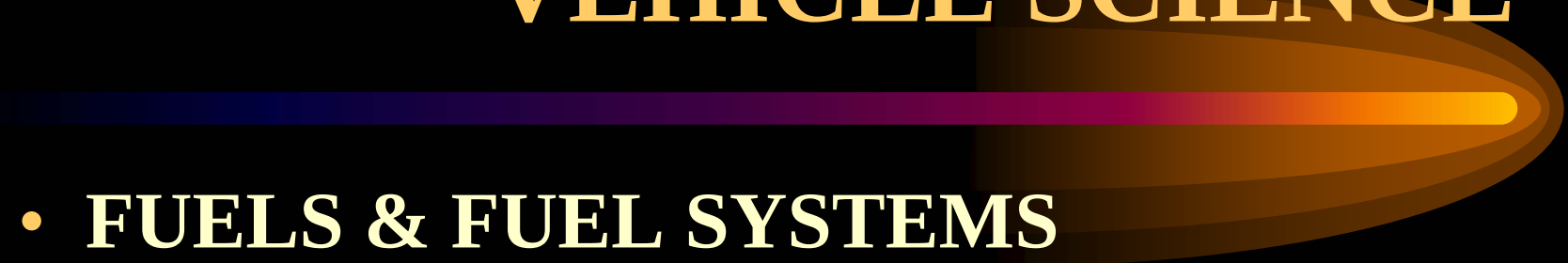
- **TERMINATION**
 - CONTINUE HAZARD CONTROL
 - CONTINUE SUPPORT OPERATIONS
 - REMOVE DEBRIS
 - RETURN TO THE STATION
 - PREPARE THE APPARATUS FOR ANOTHER CALL
 - PREPARE THE INCIDENT REPORT
 - CRITIQUE THE OPERATION

VEHICLE SCIENCE



- **ENERGY ABSORBING BUMPERS**
 - 5 MPH SYSTEM
 - 2 1/2 MPH SYSTEM
- **CATALYTIC CONVERTERS**
 - HEAT SOURCE

VEHICLE SCIENCE



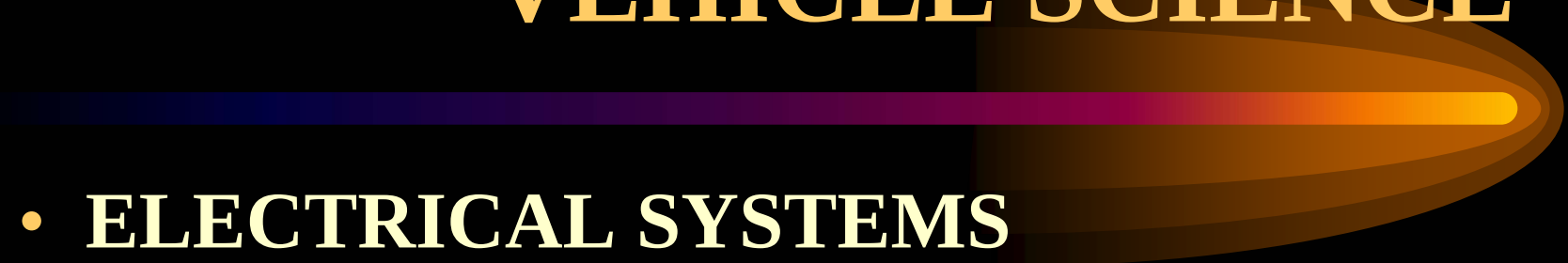
- **FUELS & FUEL SYSTEMS**
 - UNLEADED
 - ALCOHOL; GASOLINE BLENDS
 - LPG (PROPANE, BUTANE)
 - LNG
 - AUXILIARY FUEL TANKS
 - PLASTIC FUEL TANKS

VEHICLE SCIENCE



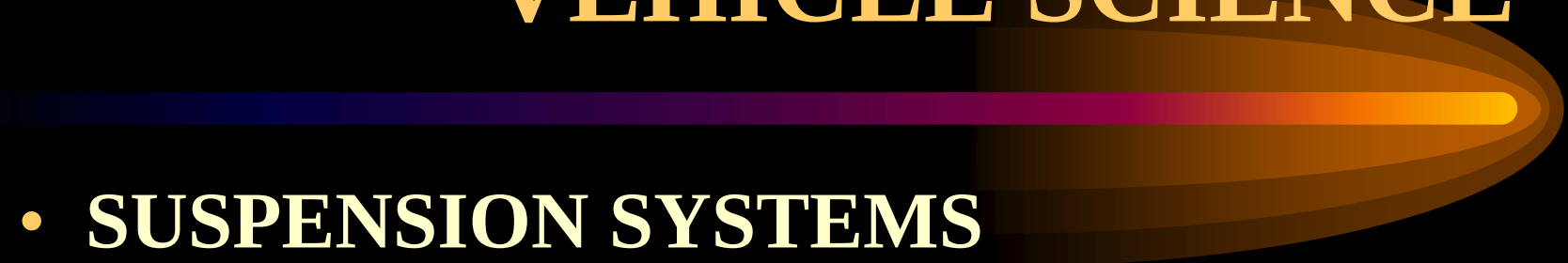
- **SIDE DOOR COLLISION BEAMS**
 - CAN YOUR TOOL MAKE THE CUT
 - STABILITY OF THE DOOR
- **CHILD SAFETY RESTRAINTS**
 - BUILT IN
 - PORTABLE

VEHICLE SCIENCE



- **ELECTRICAL SYSTEMS**
 - MULTIPLE BATTERIES
 - MULTIPLE BATTERY LOCATIONS
 - DOUBLE GROUND CABLES
 - ELECTRIC ENGINE COOLING FAN
 - ELECTRIC WINDSHIELD DEFOGGER

VEHICLE SCIENCE



- **SUSPENSION SYSTEMS**
 - STRUTS
 - GAS SHOCK ABSORBERS
 - AIR SUSPENSION SYSTEMS
 - AUTOMOBILE
 - TRACTOR TRAILER (SINGLE / DOUBLE TRAILERS)
 - BUS
- **SPLIT STEERING COLUMNS**
 - FLYING OBJECT

VEHICLE SCIENCE



- **VEHICLE BODY CONSTRUCTION**
 - HOOD JACKKNIFE SYSTEM
 - METAL
 - PLASTIC
 - FIBERGLASS
 - TOXICITY POTENTIAL
- **VAN / MINI - VAN**
 - MASS CASUALTY

VEHICLE SCIENCE

- **VEHICLE TERMINOLOGY**
 - A - POST, B - POST, C - POST, ETC.
 - FENDER WELL
 - ROOF RAIL
 - TAIL GATE, HATCH BACK
 - ROCKER CHANNEL
 - QUARTER PANEL
 - FIRE WALL
 - LOCKING DEVICE (NADER BOLT, ROOF RAIL)

VEHICLE SCIENCE



- **SUPPLEMENTAL RESTRAINT SYSTEMS**
 - DRIVER
 - PASSENGER
 - SIDE DOOR (DRIVER / PASSENGER)
 - ROOF RAIL (DRIVER / PASSENGER)

VEHICLE SCIENCE



- **SPLIT RIM WHEELS**
 - FLYING OBJECTS
- **AUTOMOBILE GLASS**
 - TEMPERED
 - LAMINATED

VEHICLE STABILIZATION



- VEHICLE STABILIZATION SHOULD BE CONDUCTED ROUTINELY. EVEN IF NO OBVIOUS PROBLEM IS APPARENT.
- OBJECTIVES OF STABILIZATION
 - INCREASE GROUND POINTS BETWEEN THE VEHICLE AND GROUND
 - DISTRIBUTE CONTACT POINT OVER A WIDE AREA

VEHICLE STABILIZATION



- **NEEDED EQUIPMENT**

- 4 X 4
- 4 X 4 WEDGES
- 2 X 4
- 4 X 4 SHORING
- HIGH LIFT JACKS
- AIR BAGS
- HYDRAULIC RAMS



VEHICLE STABILIZATION



- **VEHICLE ON WHEELS**
 - 4 POINT STABILIZATION
 - 6 POINT STABILIZATION
- **VEHICLE ON ROOF**
 - MULTIPLE APPLICATIONS
 - CRIBBING
 - AIR BAGS
 - HYDRAULIC RAMS
 - HIGH LIFT JACKS

VEHICLE STABILIZATION



- **VEHICLE ON SIDE**
 - MULTIPLE APPLICATIONS
 - FREE STANDING
 - SUPPORTED

VEHICLE STABILIZATION

- **BASIC STABILIZATION PROCEDURE**
- **TWO RESCUER OPERATION**
 - **STEP 1:** ONE RESCUER WITH THE BACK AGAINST THE AUTO, KNEES BENT, BOTH HANDS UNDER THE WHEEL WELL AND LIFT.
 - **STEP 2:** ONE RESCUER THEN PLACES THE STAIRSTEP (WEDGES) UNDER THE ROCKER CHANNEL.

VEHICLE STABILIZATION



- **BASIC STABILIZATION PROCEDURE**
- **TWO RESCUER OPERATION**
 - **STEP 3: NOW RELEASE THE WHEEL WELL, PROCEED TO THE NEXT COMPLETING ALL FOUR SIDES.**
 - 2 MINUTES MAXIMUM

VEHICLE RESCUE TECHNIQUES



- SPREADER PINCH/PRY
- VERTICLE DOOR DISPLACEMENT
- SPREADER VERTICLE LIFT
- SPREADER STEERING COLUMN DISPLACEMENT
- SPREADER DASH DISPLACEMENT
- SPREADER CRUSHING TECHNIQUES
- 3RD DOOR TECHNIQUE

VEHICLE RESCUE TECHNIQUES



- RAM DOOR ROLL OUT
- RAM INVERTED DOOR ROLL OUT
- RAM DASH DISPLACEMENT
- PARTIAL ROOF REMOVAL
- FULL ROOF REMOVAL
- RELIEF CUT

THE HYDRAULIC TOOL



- **HOLMATRO SPREADER**
 - WORKING PRESSURE - 10,500 PSI
 - HYDRAULIC FLUID - MINERAL BASE OIL
 - MAX SPREADING FORCE - 23,000 LBS
 - SPREADING FORCE - 15,000 LBS
 - MAX PULLING FORCE - 14,000 LBS
 - SQUEEZING FORCE AT TIPS - 9,700 LBS
 - WEIGHT - 41 LBS

THE HYDRAULIC TOOL



- **HOLMATRO CUTTER**
 - WORKING PRESSURE - 10,500 PSI
 - HYDRAULIC FLUID - MINERAL BASE OIL
 - CUTTING FORCE - 63,400 IN THE RECESS
 - CUTTING FORCE - 41,000 IN THE CENTER
 - CUTTER OPENING - 5 INCHES
 - WEIGHT - 27 1/2 LBS

THE HYDRAULIC TOOL



- **HOLMATRO RAM**
 - WORKING PRESSURE - 10,500 PSI
 - HYDRAULIC FLUID - MINERAL BASE OIL
 - MAX SPREADING FORCE - 36,500 LBS
 - MAX PULLING FORCE - 11,200 LBS
 - STROKE - 13 1/2 INCHES
 - WEIGHT - 40 LBS