

## Happenings

### ASP - Jan. 21

The St. Louis Chapter of the American Society of Photogrammetry has scheduled their next meeting for Wednesday, Jan. 21. The meeting will feature a presentation by Dr. Marshall B. Faintich entitled, "Advances in Digital Image Technology."

Dr. Faintich is currently assigned to the Advanced Technology Division, Systems and Techniques Directorate, where he has been primarily involved in geodetic studies, sensor scene simulation and digital image processing.

His talk will cover image processing, analysis and display techniques, and computer image generation. Emerging technologies for image processing and digital image analysis for automated feature extraction indicate a significant potential for improvement in the utilization of imagery, and this presentation should provide an interesting insight into the future.

The meeting will be held in the Aerospace Center Second Street Dining Hall. It will begin with a cash bar from 3:30 to 4:30 p.m. followed by Dr. Faintich's talk. Snacks will be served.

### FEW workshop

The Arsenal '76 Chapter of the Federally Employed Women (FEW) is sponsoring a Time Management Workshop on Thursday, Jan. 22. The workshop will be presented by Sharon Downer, University of Missouri at St. Louis, Management Development Office.

The workshop will be held in the Aerospace Center Second Street Dining Hall beginning with a social period from 3:30 to 4:30 p.m., followed by the workshop from 4:00 to 5:00 p.m. No admission will be charged. Please note that this is a change of date as was listed before from Jan. 15 to Jan. 22.

### AFA - Jan. 23

The Spirit of St. Louis Chapter Air Force Association dinner meeting is scheduled for Friday, Jan. 23. Maj. Gen. Cornelius Nugteren, Commander of the Aerospace Rescue and Recovery Service will be the guest speaker.

The meeting will be held at LeChateau Restaurant beginning with a cash bar at 6:30 p.m. The dinner will include roast top sirloin, potato, vegetable, salad and beverage and will be served at 7:30 p.m., followed by the meeting. Ticket price is \$11.50 per person.

# Orienteer

DEFENSE MAPPING AGENCY AEROSPACE CENTER

Vol. XXIII, No. 2

January 16, 1981

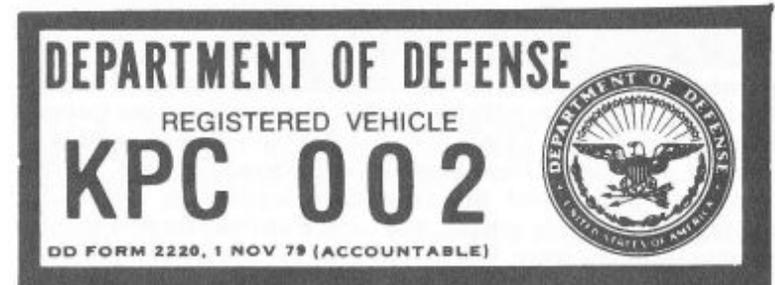
## New Vehicle-Registration Decals To Be Issued

Because of the standardization of Department of Defense vehicle-registration decals, new decals and installation tabs will be issued to Center employees during the weeks of Jan. 26-30 and Feb. 2-6, 1981. "All private motor vehicles operated on Aerospace Center installations must be re-registered during these weeks," stated Security officials. An alphabetical schedule of date and times of issuance is listed below.

A Certificate of Compliance (AF Form 533) must be completed and signed at the time of registration, and will be provided by Security officials at the registration site. The minimum limits of insurance coverage required in order to register a vehicle is: personal liability, each person - \$10,000; personal liability, each accident - \$20,000; and property damage liability - \$10,000.

Proof of ownership of a vehicle and a valid operator's permit is required at time of registration. If the registrant is not the owner of a vehicle, a letter of authorization from the owner to drive the vehicle, along with proof of ownership, is required.

Each employee is permitted to register two vehicles. This



## ST. LOUIS AFS ----

Shown above is the new Department of Defense vehicle-registration decal and installation tab as they will be affixed to the bumper of the registered vehicle. The installation tab should be placed flush left beneath the Department of Defense sticker so that a tab, which indicates the expiration date of the sticker, can be placed where the dotted line appears.

### Alphabetical Schedule of Issue

**South Annex ( Bldg 8900-4, Sec 1 Rm. 3 - Training School Area )**

Jan. 26 - A thru J - 7:00 a.m. to 2:30 p.m.

Jan. 27 - K thru S - 7:00 a.m. to 2:30 p.m.

Jan. 28 - S thru Z & make up - 7:00 a.m. to 4:30 p.m.

**2nd Street ( Bldg 36, 1B Conf. Room - Across from Dispensary )**

Jan. 29 - A thru CIU - 7:00 a.m. to 2:45 p.m.

Jan. 30 - CLA thru GAR - 7:00 a.m. to 5:00 p.m.

Feb. 2 - GAS thru KEA - 7:00 a.m. to 2:45 p.m.

Feb. 3 - KEE thru MIT - 7:00 a.m. to 2:45 p.m.

## 2nd SES Position For Center

The Aerospace Center has been notified that the Office of Personnel Management has approved the selection of Thomas O. Sepelini to fill the second Senior Executive Service position authorized for the Center.

The position as Deputy Director

for Programs, Production and Operations, has been authorized as an SES level 2 position. This is comparable to a GS-16 under the former system of ranking.

The other SES position at the Center is held by the Technical Director, Dr. Macomber.

## Incentive Awards Committee Appointed

Members of the Aerospace Center Incentive Awards Committee have been appointed.

Selected to serve one year appointments were: Connie R. Meyer, SD, chairperson and Luke J. Burns, PR, alternate chairperson. Selected as members and alternates, respectively, were: Geraldine V. Neumann and Albert J. Pyszka - CM; Douglas W. Prosser and Dotson G. Morgan - LO; William A. Hesseldenz and Jimmy W. Boyd - PP; Alton E.

Skinner and Andrew P. Newton - GA; and Barbara A. Ivery and Harold W. Howard - GD.

Selected to serve two year appointments as members and alternates, respectively, were: Timothy Scott and Gail Ogan - FE; Luke J. Burns and George B. Sigler - PR; Alfred G. Gilbert and Gertrude A. Gerszewski - SD; Donna Petry and Otto Henschen - CD; and Ruth Lockridge and Guido Tesi - AD.

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register two vehicles. This registration will expire on the month of your birth in the year 1983.

Feb. 3 - KEE thru MIT - 7:00 a.m. to 2:45 p.m.  
Feb. 4 - MOD thru SAD - 7:00 a.m. to 2:45 p.m.  
Feb. 5 - SAK thru WALL - 7:00 a.m. to 2:45 p.m.  
Feb. 6 - WALZ thru Z & make up - 7:00 a.m. to 5:00 p.m.

## Kingsley—Pioneered Center's Development Major Contributor to MC&G Today

**Editor's Note:** In the last issue of the *Orienter* we reported the death of a former Center employee — Robert H. Kingsley. As the data came to us at presstime, we were unable to deal at length with the man and his career. The following article details the importance of Robert Kingsley's contributions to the Center.

Robert Kingsley was one of the original founders of the Aeronautical Chart Service at the beginning of World War II, an organization that was to grow and expand under his direction to become the Aerospace Center that we know today. In talking with many of his friends and co-workers, all agreed that he was a major force in shaping the direction of aeronautical and target charting in the Department of Defense. He was instrumental, they said, in building the Aerospace Center from an organization of a few hundred people into the professional charting organization called the USAF Aeronautical Chart and Information Center, employing nearly 4000 persons.

According to Thomas Finnie,

former Deputy Director for Management and Technology of DMA, "Kingsley represented probably the single most important being in the history of the Aeronautical Chart and Information Center. Even after he left ACIC for DIAMC, where he was responsible for the overall management of MC&G in the Department of Defense, he continued to contribute to the Center." Coming from a man who himself was a foundation stone, those are significant words.

Kingsley began his career in charting with the Tennessee Valley Authority in 1936 working in the photo compilation and research area on new dam survey. In 1937 he transferred to the Department of Agriculture Adjustment Office as a supervisor of photogrammetric activities measuring acreage from aerial photographs. He worked in that position until 1942 when he became associated with the Aeronautical Chart Service in Washington, D.C. as a photogrammetric engineer.

The military called in 1943 and assigned 1st Lieutenant Kingsley to the Aeronautical Chart Plant in



St. Louis as officer in charge of the final compilation section. In 1945 he returned to Washington, D.C. as military chief of the photogrammetry division of the Aeronautical Chart Service. After his release from service in 1946 he maintained the same position as a civilian.

In 1948 he was promoted to the Chief of Operations at

Continued Pg. 2

## Lt. Col. Bean Receives DMSM at Retirement



Aerospace Center Director Col. Robert Burns (left) presents Lt. Col. Donald W. Bean with his citation to accompany the Defense Meritorious Service Medal that Bean received while serving as director of Logistics from June 1978 until December 1980. "In this important assignment his exemplary leadership, aggressive approach to problem solving, and superb attitude toward mission accomplishment were vital factors in the outstanding level of achievement in his directorate during a dynamic period of growth and program modernization at the Aerospace Center," the citation read. Lieutenant Colonel Bean retired from military service on Jan. 1, after 21 years of service with the Air Force.

## Understanding Mental Health

Part I

### The Art of Relaxation

It is surprising how little the art of relaxation is practiced in America. Relaxation is more than getting away from the work-a-day grind, and it is more than the absence of stress. It is something positive and satisfying - a feeling in

more stressful. These conditions, in turn, can create a greater need for mental health services to help people cope more effectively with their environment.

In the course of a day, people are frequently distracted from their

## Kingsley . . .

Continued From Pg. 1

Headquarters Aeronautical Charting Service and in 1951 was recalled to active military duty. He was assigned to the Air Targets Branch of the Air Intelligence Division, Hq USAF in Germany, as the planning and programming officer for target material.

He completed his service in 1952 as a lieutenant colonel and returned to St. Louis as the technical advisor to the Commander of the Aeronautical Chart and Information Center.

During his tour with the Center he is remembered as being a strongly people-oriented manager and a major contributor to the conversion of ACIC into a top professional mapping organization.

He left the Center in 1962 to join the Defense Intelligence Agency in the plans, policies and programs area with responsibility for the Department of Defense mapping, charting and geodesy program development.

He worked with DIA until his retirement in 1972. Not being one to completely drop out of the MC&G picture, he served as a consultant to the Defense Mapping Agency for several years after 1972.

Robert Kingsley was also well-known in the sports world for his consultant work on the design of baseball parks. For a number of years his hobby had been the prediction of the number of home runs that would be hit in a given period of time at major league parks. His uncanny ability to

## December Honor Roll

### 35 YEARS

Norbert R. Cook, John G. Freeman, Maurice A. King, Carl M. Klebusch.

### 30 YEARS

Willard D. Buford, Eldon A. Kiraly, Sandy J. Miller, Raymond L. Paulsell, Esther C. Smith, William A. Smith, Morris L. Todd.

### 25 YEARS

Clarence J. Goodberlet, Elmer J. Hofmann, Jr., Herbert T. Levack, Norman A. Ohnemus, Charles W. Phillips, Doyle L. Redenbaugh, Norman E. Walker.

### 20 YEARS

Maurice D. Daniell, John B. Neville, George Pugh, Robert G. Quinn.

### 15 YEARS

Wayne E. Clark, Rollie Comer, Jr., Lillian H. Doebber, Gerald E. Egler, Eugene V. Gamble, Jr., Robert W. Hanson, Barbara J. Henson, Shirley A. Kellermann, Chester Lewis, Felix E. Martin, David W. Thibodeau.

### 10 YEARS

Joseph P. Barbaglia, Ray E. Musgrave.

### OUTSTANDING PERFORMANCE RATING

Nancy J. Rieser.

### OUTSTANDING PERFORMANCE RATING/ QUALITY SALARY INCREASE

Lucille I. Baltzell, James Butler, Joyce C. Kren, Brenda K. Maxfield, George L. May, III, Max G. Roberts, Olin B. Spyers.

### OUTSTANDING PERFORMANCE RATING/ SUSTAINED SUPERIOR PERFORMANCE

Gerald M. Elphinstone, Janet M. Kahle, Harry A. Salomon, Sandra J. Standeford.

### QUALITY SALARY INCREASE

John D. Flaherty, JoAnn Hyatt.

### SUSTAINED SUPERIOR PERFORMANCE

Robert P. Brownell, Patricia A. Dickmann, Carl R. Doss, Robert T. Endo, Dean A. Graves, Johnny C. Hall, Linda A. Hayes, Nathaniel Henley, Richard F. Howell, George H. Huelsmann, Edward E. McCormack, Jr., Janie B. Powell, Edwin K. Rychner, Gilbert K. Sievers, Antonio Valenti, Wiley West, Elizabeth F. Wissman.

### SPECIAL ACHIEVEMENT AWARDS

Forrest J. Dalton, Jessie E. Jones, Russell E. Pickup, Michael J. Ronshausen.

### SUGGESTION AWARDS

James P. Flannery, \$215.00; Russell T. Byington, \$185.00; John R. Haddick, \$50.00; William J. Adams, \$25.00; Edward D. Cejka, \$25.00; Wallace D. Erwin, \$25.00; Richard A. Gephart, \$25.00; William H. Graham, \$25.00; Max E. Ketcham, \$25.00; Rose C.

which one experiences peace of mind. True relaxation requires becoming sensitive to one's basic needs for peace, self-awareness, thoughtful reflection and being willing to meet these needs rather than ignoring or dismissing them.

The continuing pressures of everyday life take a heavy toll on the physical and mental well-being of millions of people each year. Medical research into the origins of common diseases such as high blood pressure, heart disease, ulcers and headaches shows a connection between stress and the development of such ailments. In the area of mental health, stress frequently underlies emotional and behavioral problems, including nervous breakdowns. Various environmental factors - from noise and air pollution to economic disruptions, such as unemployment, inflation and recession - can make living conditions even

more difficult. Living in crowded parks, or personal problems - conflicts with family members, disagreements with employers, poor living or working conditions, boredom, loneliness - to name just a few. It is easy to get so preoccupied with living, thinking, organizing, existing and working that one disregards his or her needs of relaxation.

Most people reared in our production oriented society feel guilty, or at least ill-at-ease, when they are not actively involved in accomplishing tasks or producing things. Even their vacations become whirlwind productions that leave the participants exhausted after concentrating too many experiences into a short period of time. Such behavior undermines the value of vacation time as an opportunity for diversion, calm, restoration of one's energies and gaining new experiences.

## Harris To Be Ordained

Singleton L. Harris, an offset photographer in SDR, will be ordained a Permanent Deacon of the Catholic religion on Jan. 31. The Most Reverend John L. May, S.T.L., Archbishop of St. Louis, will perform the ordination ceremony for Harris and others in the class, which is only the third permanent deacon class in the history of St. Louis to be ordained.

As a deacon, Harris will be able

to perform everything a priest does except to say mass, hear confessions or ordain others. He attended college for three years studying religious education, in order to be ordained.

Harris has also been a member of the Third Order of Franciscan Monks since 1950, and was the first from that order to be ordained a deacon.

William H. Graham, \$25.00; Max E. Ketcham, \$25.00; Rose C. Messinger, \$25.00; Gerald C. Schuld, \$25.00; James L. Smith, \$25.00; Joyce A. Taylor, \$25.00; Gene H. Niederschmidt; James G. Unger.

## Junior Achievement Advisors



## In Sympathy

Word has been received of the death of David C. Ross, a former Center employee. Ross retired from the Center in June of 1980 and had worked as a warehouse foreman in LOSMR.



His death occurred Dec. 23, 1980.

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Carlos Harris, a data transcriber in CMDOS, was declared legally dead of lupus disease on Dec. 24, 1980. He had been at the Aerospace Center since Dec. 1, 1980.

The following people have volunteered to be Junior Achievement Advisors for 1981. Pictured from left to right, they are: Beverly A. Williams, SDCS; Willie J. Petty, CDCDB; Maurice D. Williams, Jr., SDDSC; Mary E. Guempel, GDCC; Bert W. Bryant, CDCDC; coordinating adviser, Walter H. Fisher, SDDS; John A. Lefman, GDLBB; Johnetta R. Lowe, CDIAD; Jo Ellen Young, CDIDD; Joan F. Hagedorn, CDCAA. Not available for picture were: Helen L. Bullock, CDCCB; Jessie E. Jones, GDG; Gross T. Marcus, GDCB; Warren A. Mathews, GDLCC; Livingstone B. Sykes, CDT; Allen H. Williams, GDMCD; and consultants Joe Goines, GDT; and Curtis Triggs, GDP.

# Word Processing-An Update

The Word Processing System (WPS) opened its doors to Aerospace staff personnel in October 1979. Prior to its official opening the system became operational in June of the same year and went through a four month "shakedown" period. In the 18 months the system has been functioning, word processing has been assessed and adjustments, where needed, have been made.

Since its initial beginning (with the opening of the Word Processing Center on the first floor of Bldg 36) the WPS has expanded from a totally centralized Word Processing Center to a modified Word Processing Center and a satellite system. Several satellites are strategically located throughout the Aerospace Center complex. Three satellites are located in Bldg 36 - one on the 5th floor, Section 5B; the second is on the 4th floor, Room 144 (this

satellite can process classified material); and the third is on the 3rd floor, Section C. Another satellite is located in the Personnel Office Bldg 37. The final satellite is located 8900 South Broadway in Bldg 4, Room 15.

According to the Director of Administration, Lt. Col. Gerald Carlton, "The decentralization of word processing through the use of satellites has made the system more accessible to the user. Decentralization, a trend in private industry for the last six or seven years, has become possible because of breakthroughs in technology and reduced equipment costs."

The satellites function independently through the use of distributed logic system which allows the satellites to act as stand alone units through the use of "intelligent" terminals. Allen Elrod, Administrative Service's

Branch Chief, believes the stand alone capability is important because "it gives us a greater degree of flexibility. If one of the satellites has to be down for maintenance the other satellites can continue to operate at full capacity." Elrod also commented, "The new equipment we have acquired allows a faster response to our users." The equipment will also allow more work to be done in the secure area.

During the 18 month period that the system has been operating its work load has increased steadily and only recently has the work load leveled off. The system now averages a volume of 500,000 lines of type per month. The largest users of the WPS are PO, CD, PP and LO. These organizations consistently order well over 100 job orders a month and several of these organizations average well over 1000 pages of material a month.

Some of the special services provided by word processing have proven to be great time and cost savers. The Central Telephone and Dictation System allows the user to use the telephone for dictation which can later be transcribed by word processing. Use of the dictation system has dropped off recently. The reason for this decline, it is believed, is that once the novelty of the dictation system wore off the number of regular users decreased. However, once more people are trained to use the dictation system it should again operate at full capacity.

The use of permanent discs has also saved time and money by allowing for the quick update or modification of republished materials, such as manuals,



**Here a Word Processing Unit is in operation at the Word Processing Center. Similar units are found in the four satellites located around the Aerospace Center.**

organizations.

One of the most recent developments has been the installation of equipment at 8900 South Broadway which allows point to point communication between the South Annex and 2nd Street. The Word Processing Center and the satellite at 8900 South Broadway can now actually "talk" back and forth. In the near future the Center will be connected with its sister agencies (HQ DMA, HTC, IAGS and DMS) through a similar communication system. It is quite possible that one day the Aerospace Center will be able to communicate with numerous government agencies through the use of "electronic mail", a process that allows communication systems to exchange information through the use of an interface device.

What else might the future hold? The Office System Study Group

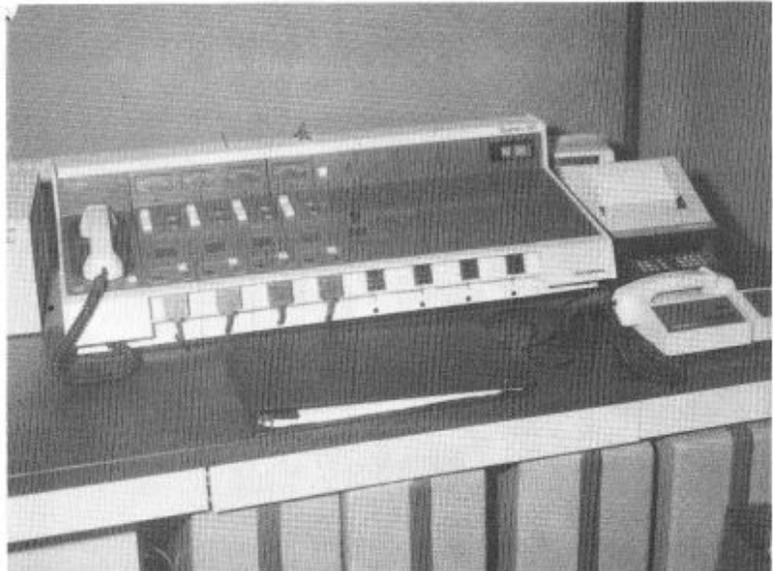
formation coupled with the many breakthroughs in technology may mean in the future that the Aerospace Center may institute the multi-function work station. These work stations would merge word processing, data processing and communication equipment to make information more readily available to the user. "Decision making," according to Allen Elrod, "depends on having the necessary information at your fingertips."

That day, however, is in the future. Word processing is still in the developmental stages throughout the federal government and at the Aerospace Center. Currently new equipment applications are being explored and in the years ahead further streamlining of paperwork and information processing will be the goal of the Word Processing System.





Here, WP operator transcribes telephone dictation tapes into manuscript form.



The Central Telephone Dictation Unit, located in the Word Processing Center, allows the user of the system to phone in dictation from any location (including outside the Aerospace Center).

materials, such as manuals, handbooks, operating instructions, organizational listings, or duty rosters. The Aerospace Center currently maintains a file of 165 discs for quick updating of material for various AC

The Office System Study Group was recently established to investigate alternatives for improved administrative support within the Center and to suggest a course of action. The rapid increase in the amount of in-

System.

## New Officer In STA



Air Force Maj. George M. Lacy has reported for duty at the Aerospace Center as acquisition management officer in the Acquisition Systems Development Division of the Directorate of Systems and Techniques.

Major Lacy comes to the Center from McDonnell Douglas where he was an Air Force Plant representative with Det. 42, Contract Management Division. He holds a BS degree in engineering from Southern Illinois University at Carbondale, Ill., and a MS degree in engineering from the Air Force Institute of Technology at Wright Patterson Air Force Base, Ohio.

Major Lacy has been in the Air Force for 13 years. He is a native of Carlinville, Ill., is married and has two sons.



This unit was specially designed for processing classified material.

## Arsenal Co-ed Volleyball Classic

The 1980 Arsenal Co-ed Volleyball Classic Championship belongs to the Good, Bad & Ugly. In the championship semifinals the Volley of the Balls defeated Rinky Dink Inc. behind the excellent play of Mike Kazmaier and Herb Baker. In the other championship semifinal game the Good, Bad & Ugly defeated Uneven Odds with outstanding play by Jim Unger and Jody Doerer. This set the stage for the championship final with the Good, Bad & Ugly beating the Volley of the Balls in two games to capture the championship. Members of the championship Good, Bad & Ugly team are: Coach Jim Simpson, Coach Carol Greco, Marilyn Simpson, Jeanne Provaznik, Nancy Clark, Barb Lair, Nick Parker, John Doty, George Huelsmann, Joe Klein, Jim

Unger and Jody Doerer. Members of the 2nd place Volley of the Balls team are: Coach Bette Friel, Herb Baker, Gerald Elphington, Carolyn Elphingstone, Brenda Maxfield, Jimmy Maxfield, Mike Kazmaier and Judy Kazmaier.

In the consolation championship semifinals, the Leftovers defeated the Serving Line and then defeated the Xmas Capers in the finals to capture the consolation championship. In the other consolation semifinal game Xmas Capers defeated Chinese Sandpeople to gain the finals. Members of the consolation championship Leftovers team are: Coach Chuck Arns, Louise Calloway, Shirley Miner, Tom Christoffel, Bill Volk, Linda Leise and Chuck Baker.

—Chuck Arns

## Co-ed Volleyball Standings

### Standings Through Jan. 13

Division A		Division B			
Won	Lost	Won	Lost		
Knetknockers	30	3	Good, Bad & Ugly	26	7
Leftovers	26	7	The Volley of the Balls	25	8
12 Paks	24	9	Mickey's Tavern	23	10
Out to Lunch Bunch	21	12	Chinese Sandpeople	23	10
Baker's Dozen	18	15	Golden Spikers	17	16
Serving Line	18	15	Sugar Daddies	17	15
High Ballers	11	22	Network	14	19
Lynch Mob	10	23	Uneven Odds	13	20
Ziegfield's Volleys	9	24	Mack Attack	9	24
V O Volleyers	7	26	Up For Grabs	9	24
Renegades	7	26	Chivas Regals	7	26

## Carto Training Class 81-B Grads

## Routes To Fuel Economy

### Part III Vehicle Selection

Choosing which vehicle to buy is the most important fuel economy decision you can make. Many factors affect your vehicle purchase decision. These include vehicle style, make, comfort, dependability, performance, safety and economy. But if you want to make the wisest vehicle purchase decision you must ask: What are you going to use the vehicle for every day and do the occasional special purpose uses justify the car-life expense?

#### The Fuel Economy Framework

With fuel economy considerations providing the framework upon which your vehicle selection will be based, you'll have to look at the following. Miles driven - The total miles you drive really influences gas purchase and vehicle operating costs. The way to reduce operating cost is to buy a high mileage vehicle. Type of trip - Will your vehicle be used for a lot of short trips? Then mpg will be a major factor. Number of vehicles - If you own two vehicles, do they meet different needs? Is one of them more fuel efficient? Common load - How many people and how much cargo will be carried in the vehicle every day? Keep the answers to these questions in mind when you're looking at vehicle design, weight, engine size and type, fuel efficiency and option efficiency.

#### Determining Size

Which vehicle size meets your transportation needs the best? The classes of vehicles include: two-seater; mini-compact; sub-compact; compact; mid-size, large, small station wagon; mid-

Mileage Guide estimates assume that the vehicles are broken in and are driven in warm, dry weather on level roads. The test for all the vehicles are done under exactly the same conditions and represent average driving conditions. You may not get the mileage estimated for any particular vehicle. Many factors, including your driving habits, road conditions, the type of trips you make, and vehicle condition, influence you mpg.

You should study the Guide to select a vehicle with the highest mpg that meets your other important purchase considerations. If a mid-size is indispensable for your travel needs, then select a mid-size from among the most fuel efficient mid-size vehicles.

#### Specifications for Fuel Economy

Other vehicle specifications must be considered when choosing a vehicle for the greatest possible fuel economy. The major ones include vehicle weight, aerodynamic design, engine size and type, vehicle transmission, load, vehicle axle, tire selection and power options.

#### Vehicle Weight

Vehicle size is secondary to vehicle weight or fuel economy. As a general rule, fuel economy is reduced from one to five miles per gallon for every 500 pounds gained in vehicle weight.

#### Load

That "small is beautiful" is not an inflexible fuel economy maxim. A small station wagon that must pull a trailer frequently may have to work so hard that your fuel economy is sacrificed. And if that's the load your vehicle will need to carry often, then a mid-size station

demand, but it allows more efficient normal driving with efficient extra power available.

#### Vehicle Transmission

It used to be a fairly firm rule that a manual transmission was more fuel efficient than an automatic. The newer automatic transmissions are lighter, and improvements such as torque converters and lower gear ratios make them more fuel efficient than they used to be. With all other factors equal, a conventional automatic transmission, compared to a standard, can use more fuel. But an unskilled driver of a manual transmission may consume a greater amount of fuel by stalling the engine, running in the wrong gear, or revving the engine while shifting. So if you drive mostly in the city, are not a smooth shifter and are not willing to become one through practice, it might be more fuel efficient to go with an automatic.

#### Vehicle Axle

The rear-axle ratio is defined as the number of times the drive shaft must rotate to turn the wheels one time. A low rear-axle ratio is normally more efficient than a high ratio because the engine must power the drive shaft fewer times to turn the wheels once. So, the lower the axle ratio, the better the mileage, and the less wear on the engine.

#### Tire Selection

When you buy radial tires you are probably making your most important fuel economy purchase decision — aside from selecting the basic vehicle itself. Radial tires



Recent graduates of Cartographic Training Class 81-B were: First row, left to right: Barry M. Taylor, University of Missouri; Alan C. Cina, University of Wisconsin/Madison. Second row, left to right: Meredith B. Fields, University of Texas; RoseMarie S. Yarbrough, Southern Illinois University, Edwardsville; Ray J. Foeller Jr., Southern Illinois University, Edwardsville; Mary H. Rellergert, University of Missouri; Lyndon D. Sinele, Southwest Mo. State University; James A. Heimerl, St. Cloud State; Guy A. Collins, University of Wisconsin/Platteville; Jeanette M. Maschmann, BA, Fontbonne College, MA, St. Louis University. Third row, left to right: Bruce A. Brown, University of Michigan/Ann Arbor; Mary Ann Becker, Southern Illinois University, Edwardsville; Richard A. Spencer, Northwest Missouri State; Nathaniel O. Rentz, Claflin University; Mark J. Kaiser, University of Toledo; Randall L. Carlson, California State Polytechnic University; Donald C. Shepoka, University of Nebraska.

large, small station wagon; mid size-station wagon; large station wagon; small pickup and standard pickup truck; van; and special purpose truck. Once you've established what size vehicle you need, review the mpg estimates and information in the Gas Mileage Guide for that class vehicle. The Guide is available, free by law, at new car dealerships. Key comparative mpg information is also displayed by law on every new car.

What to expect from estimates.

## Rolls 722

Lane G. Mousel, CDABA, rolled a high three game series of 722 on Dec. 18. The series consisted of games of 210, 258 and 254. Mousel bowls in the Thursday Stein Invitation League at the Stein Brothers' Bowling Alley. Lane is in his first year of bowling and has an average of 167.

THE ORIENTOR is an official newspaper, published bi-weekly on Friday by and for the personnel of the Defense Mapping Agency Aerospace Center, at St. Louis, Missouri, as authorized by DoD Instruction 5120.4. Opinions expressed herein do not necessarily represent those of the DoD.

**Col. Robert C. Burns**  
Director

**David L. Black**  
Chief, Public Affairs Office

**Nancy Brannon**  
Editor

carry often, a mid-size station wagon may be your best bet.

### Aerodynamic Design

The smaller the frontal area of a car, the better gas mileage it will get. When air resistance is lowered, fuel economy increases. But take into account your travel habits. If most of your driving will be at moderate (45 mph or slower) speeds, the effect of frontal design on gas mileage will be minimal. If most of your driving will be at highway speeds, frontal design could be a factor.

### Engine Size and Type

Selecting the smallest engine that meets your needs and matching it to your model choice is the best idea. A small engine in a small car is usually most economical, but it's not as economical if loaded down with heavy power options. So figure on comparing the fuel efficiency ratings of your model choice and options with engine size to get the combination that gives you the best mpg. Usually it's a four-cylinder engine for a small car, a six-cylinder for a large one, and an eighty-cylinder for a car that has to carry heavy loads nearly every day.

### Diesel or Turbo-Charged Engines

Diesel or turbo-charged engines are other energy saving alternatives. A vehicle powered by diesel fuel is capable of getting 25% or more mpg than an identical gasoline powered vehicle. With a turbo-charger, a smaller engine has the power of a larger engine on

basic vehicle itself. Radial tires can provide a substantial 3 to 7 percent improvement in your mpg over conventional bias-ply tires in highway conditions. Radials are built to minimize rolling resistance. While they may cost more than other tires, they tend to last twice as long and help improve vehicle handling.

### Power Options

Power options will increase your vehicle's power requirements in two ways - by using power themselves and by adding weight. If you own a small car, power options will penalize your gas mileage even more than on a larger car, because the added weight and power requirements are an added strain. Most power options are not necessary on a small car. If you want "something extra" choose luxuries like super sound equipment or plush leather seats that add to your enjoyment without subtracting from your mpg.

### Air Conditioning

Some air-conditioning units can add as much as 100 pounds of weight to a car and in city driving, can cause a 1 to 3 mpg reduction in fuel economy. Designers are creating more efficient air-conditioning equipment all the time, so the penalties aren't what they were. It's how you use the air conditioner that makes the difference. The most fuel efficient cooling is with windows up and flow-through ventilation on. If you must adjust the temperature in the vehicle, use moderate settings.