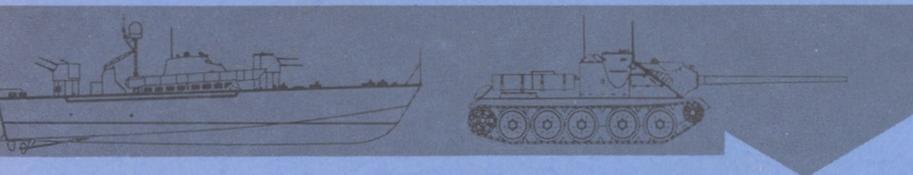


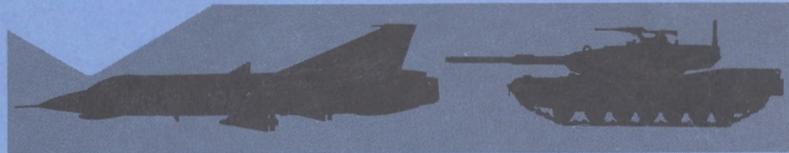
DIA MANUAL

DIAM 57-25-171

INTELLIGENCE



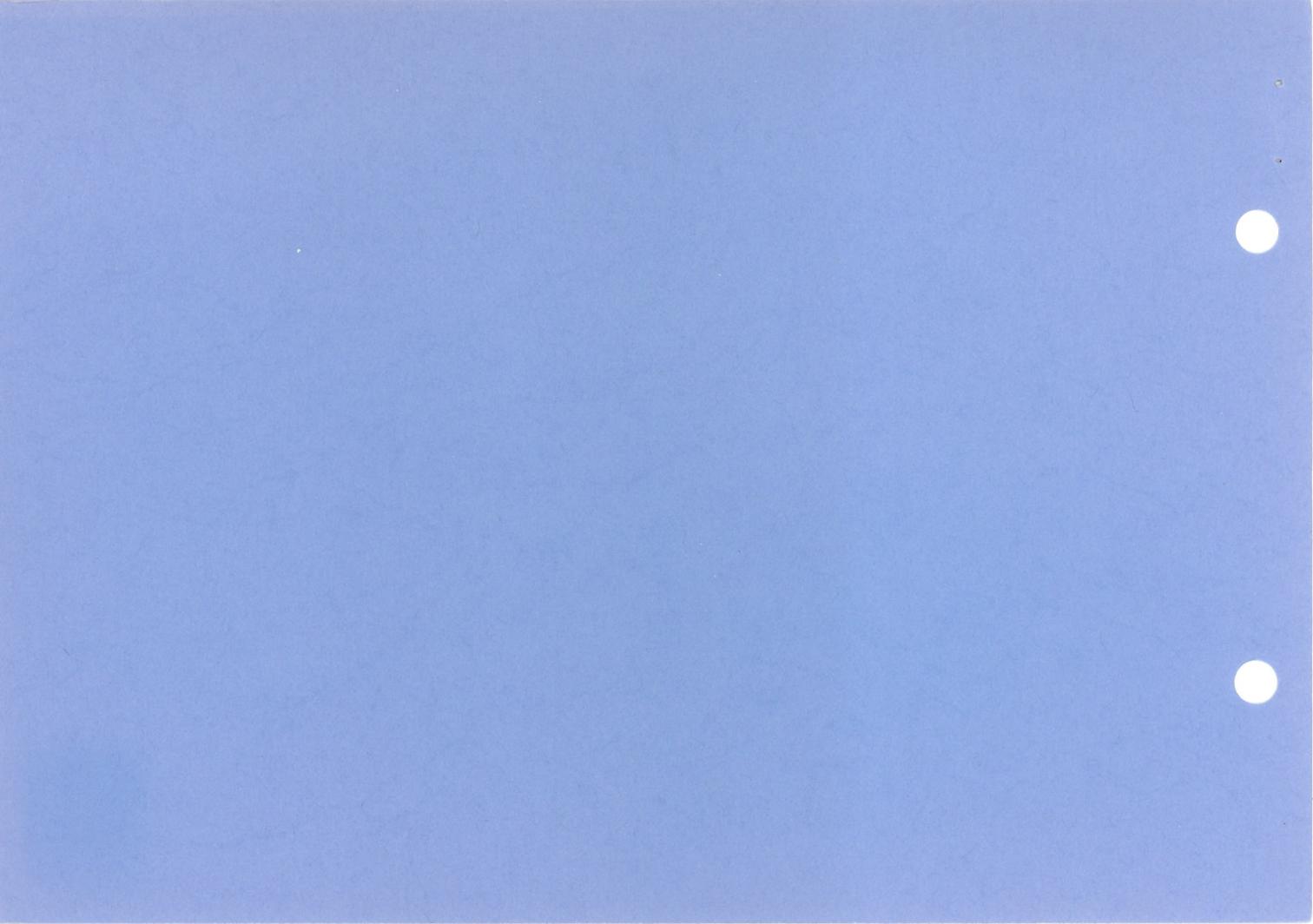
**SCALE MODELS FOR
RECOGNITION TRAINING**



17 MARCH 1981

DEPARTMENT OF DEFENSE





SCALE MODELS FOR RECOGNITION TRAINING



17 MARCH 1981

**PREPARED BY 460 RECONNAISSANCE TECHNICAL SQUADRON (TAC)
LANGLEY AIR FORCE BASE, VIRGINIA
UNDER THE DIRECTION OF HEADQUARTERS UNITED STATES AIR FORCE.**

SCALE MODELS FOR RECOGNITION TRAINING

During an Air Force Working Level Recognition Training Conference held at the 460 RTS in November 1979, it was agreed that a medium was needed to inform military units on how to acquire and use scale models in Recognition Training. In response to this need, the 460 RTS has produced this model pamphlet.

The purpose of this document is to provide information on obtaining and effectively using scale models to support Recognition Training programs throughout the United States Air Force. Much of the information presented was provided through the MAJCOMS by units who are currently using scale models to augment their individual training efforts. In addition to MAJCOM inputs, portions of the December 1978 issue of the Joint Services Recognition Journal have been used for this pamphlet.

It is hoped that this information will aid in improving present Recognition Training programs everywhere. Your suggestions and comments are welcomed.

This publication was produced by the 460th Reconnaissance Technical Squadron, Langley AFB, Virginia 23665.

Send requests for distribution and recommendations for improving this pamphlet through MAJCOM to 460 RTS/TT Langley AFB, Virginia.

BY ORDER OF SECRETARY OF THE AIR FORCE

OFFICIAL:

Van L. Crawford, Jr., Colonel, USAF
Director of Administration

Lew Allen, Jr., General, USAF
Chief of Staff

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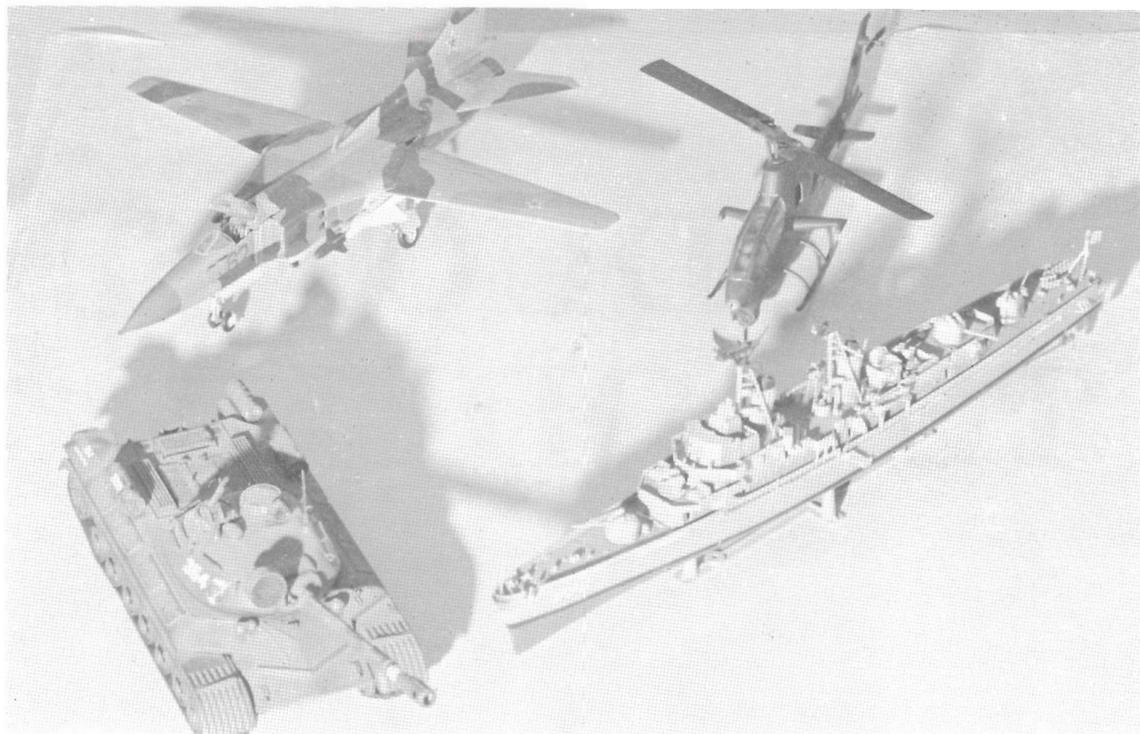
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INTRODUCTION TO MODELS

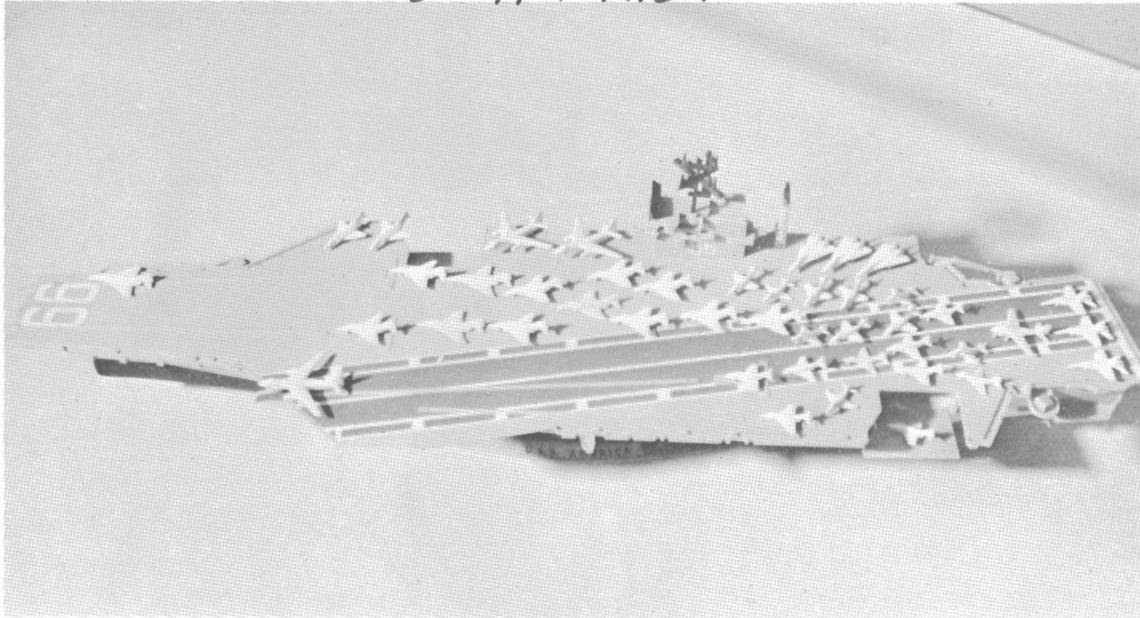


It is often asked why models are not now issued officially from a central source as they were many years ago.

17 MARCH 1981

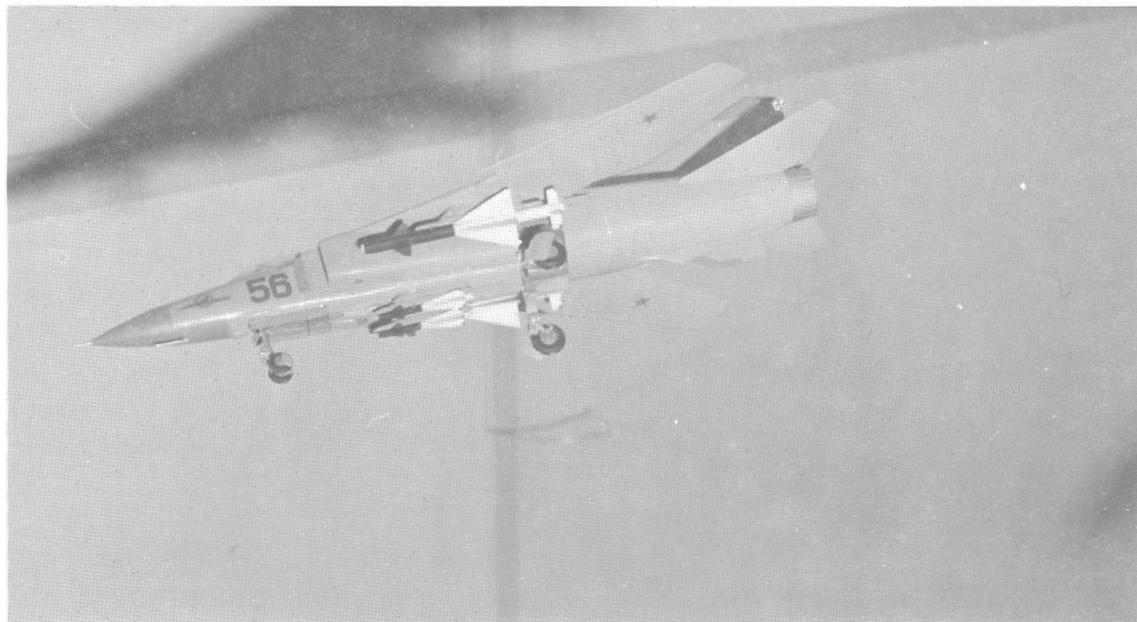
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~~TARAWA~~ ^{MSR}
USS AMERICA



Solid wood, plastic and reinforced plaster models were officially issued by the United States during the Second World War.

MIG-23



Post war, there were difficulties in keeping the series updated and in the early 1960's the United States abandoned their issue program.

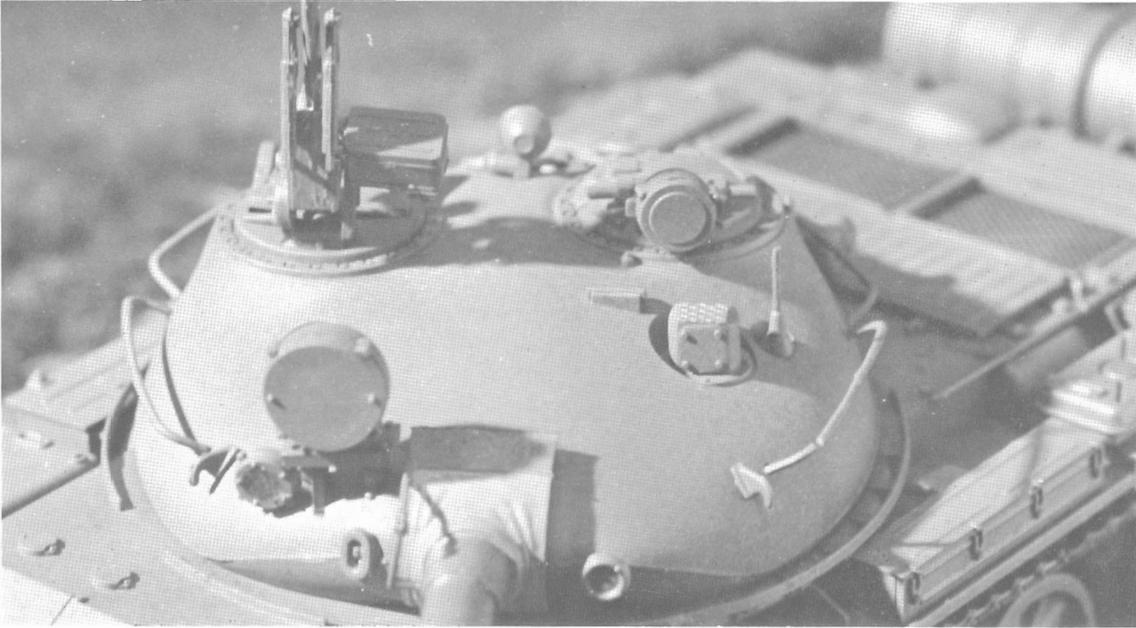
HH3



During the same time, Great Britain's Ministry of Defense also discontinued their Joint Service Model Distribution program. Today commercial models can be purchased by units or individuals at very reasonable prices.

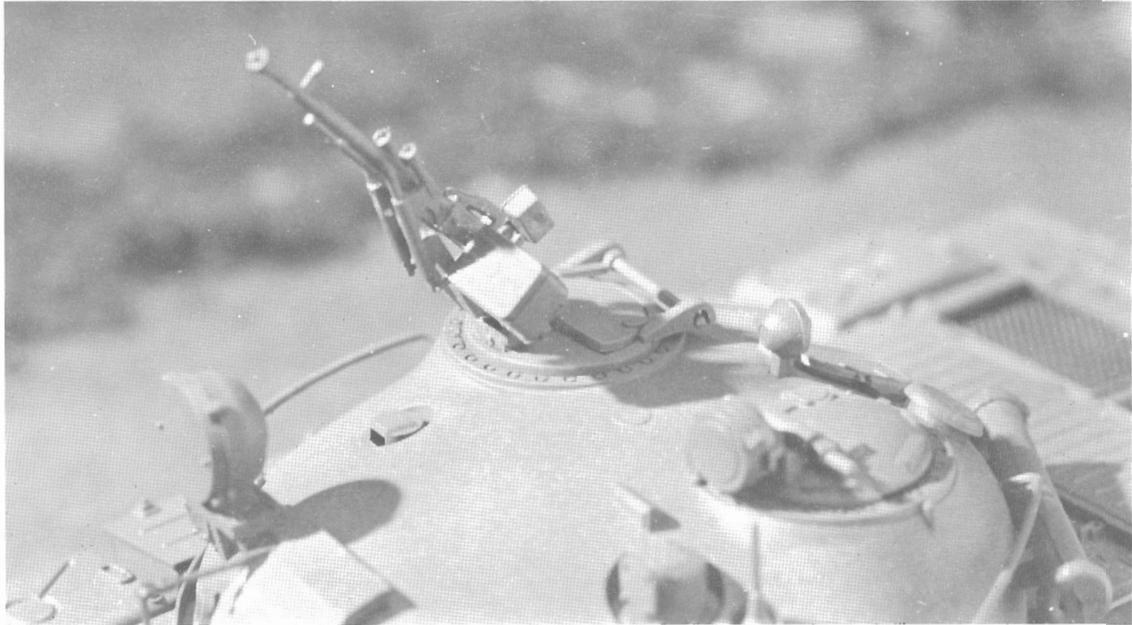
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T-62



Most models are produced for the model enthusiast and high standards of accuracy are usually maintained.

T-62



The fact that these model builders review the models very perceptively helps the market maintain high standards.



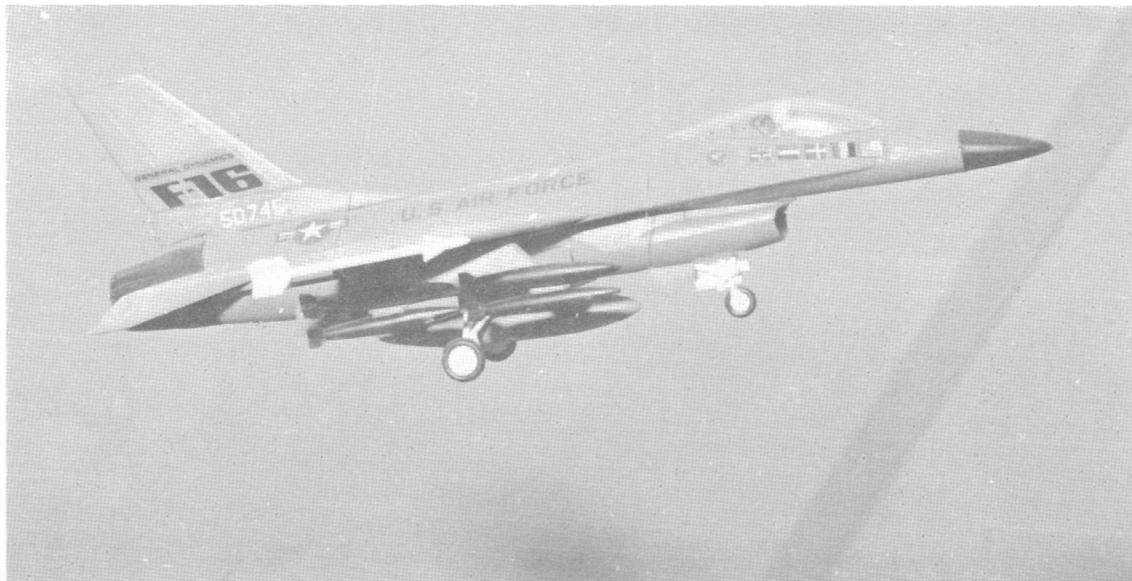
The added advantage of using scale models for Recognition Training is evident when compared to any two-dimensional medium such as books, posters or slides.

F-16



These two-dimensional tools, like this photograph, present the subject in an isolated position and do not show the many angles needed for recognition training.

F-16



Scale models are a practical way of providing three-dimensional views of aircraft, ships and fighting vehicles for classroom use as well as private study.

F-100



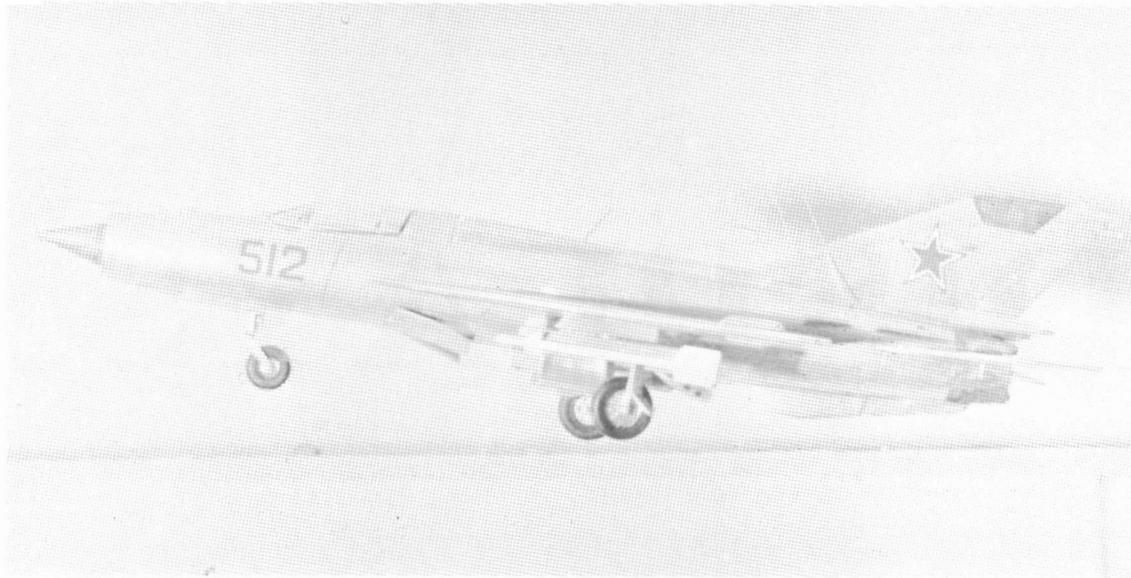
Models can also be used in animated photography to show aircraft in flight from various angles and ranges.

17 MARCH 1981

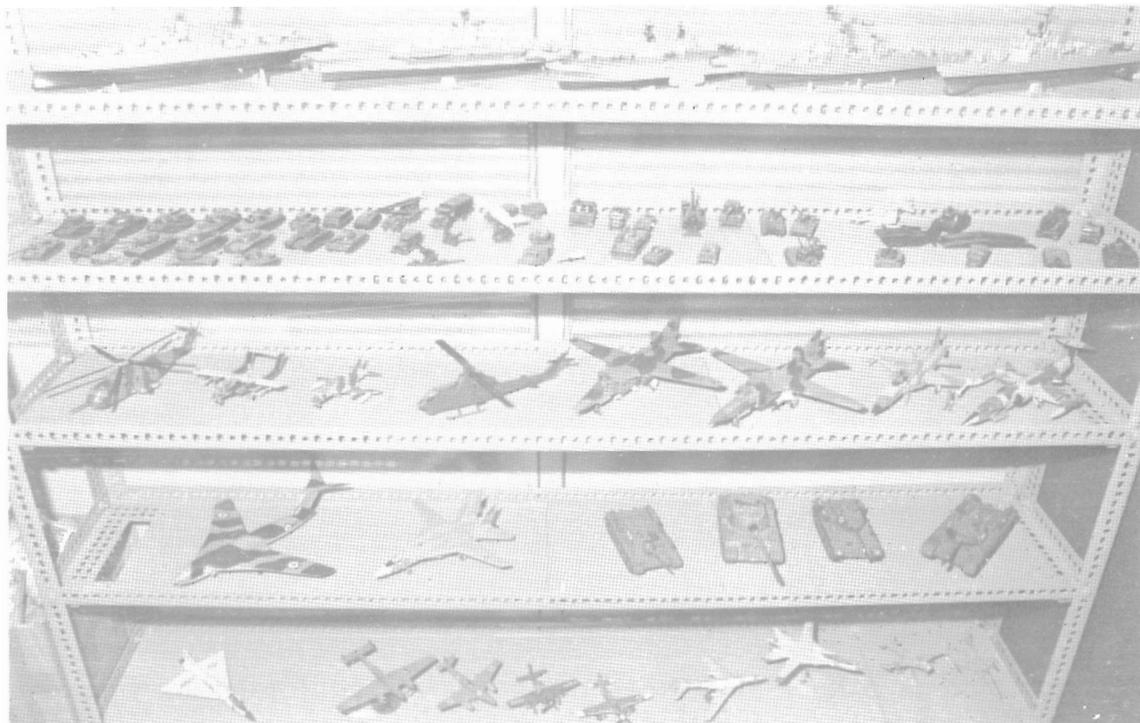
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DISPLAYS

MIG-21



There are many ways an imaginative instructor can display models. For example, they can be suspended, as seen here. In addition, glass display cases can be used to insure protection of expensive or delicate models.

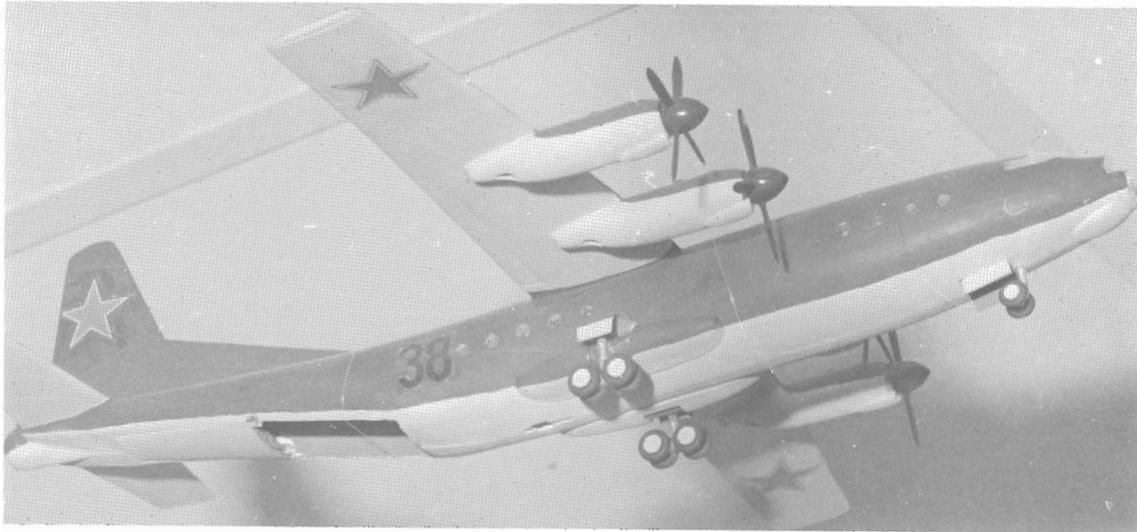


Old shelving can be refurbished and provides a good "Hands On" display with a minimum of wasted space.



Aircraft models can be suspended to show their configuration from all angles. For example, models that are painted flat black and hung from the ceiling are good tools for teaching the basic shapes and ID features of threat aircraft.

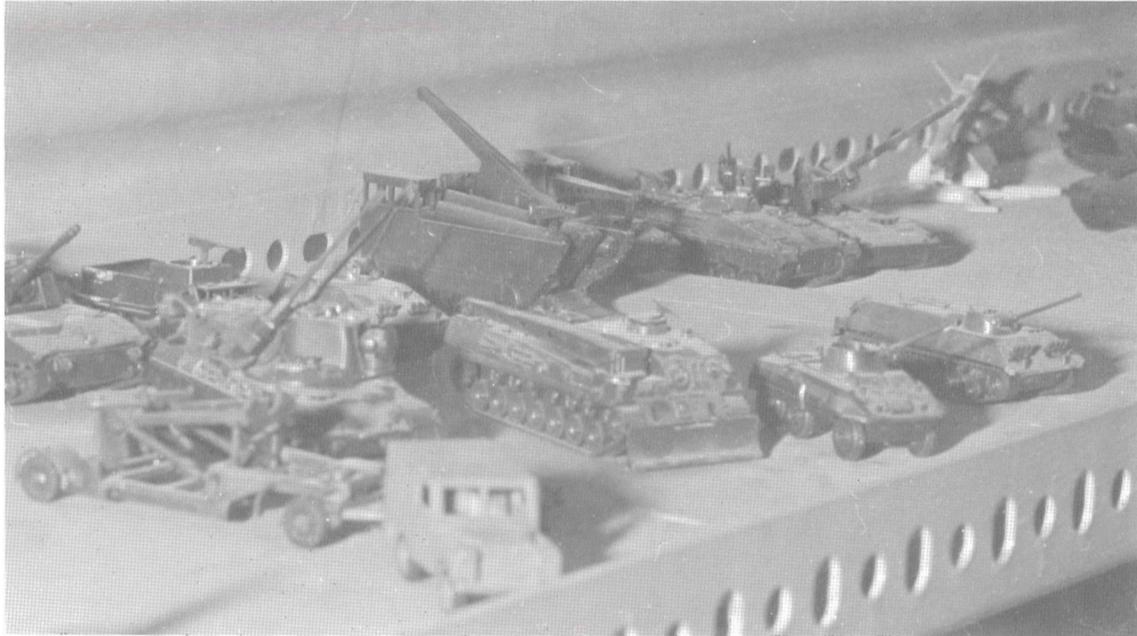
AN-12 CUB



This is a good "second phase" teaching aid that will sharpen aircrew recognition skills in identifying friend from foe, assuming of course that the enemy is flying different aircraft and has not previously been supplied with U.S. arms.



Land and sea surface models can be turned to provide all-around viewing. This provides important "changing aspect" training that simulates real world targets and threat identification.



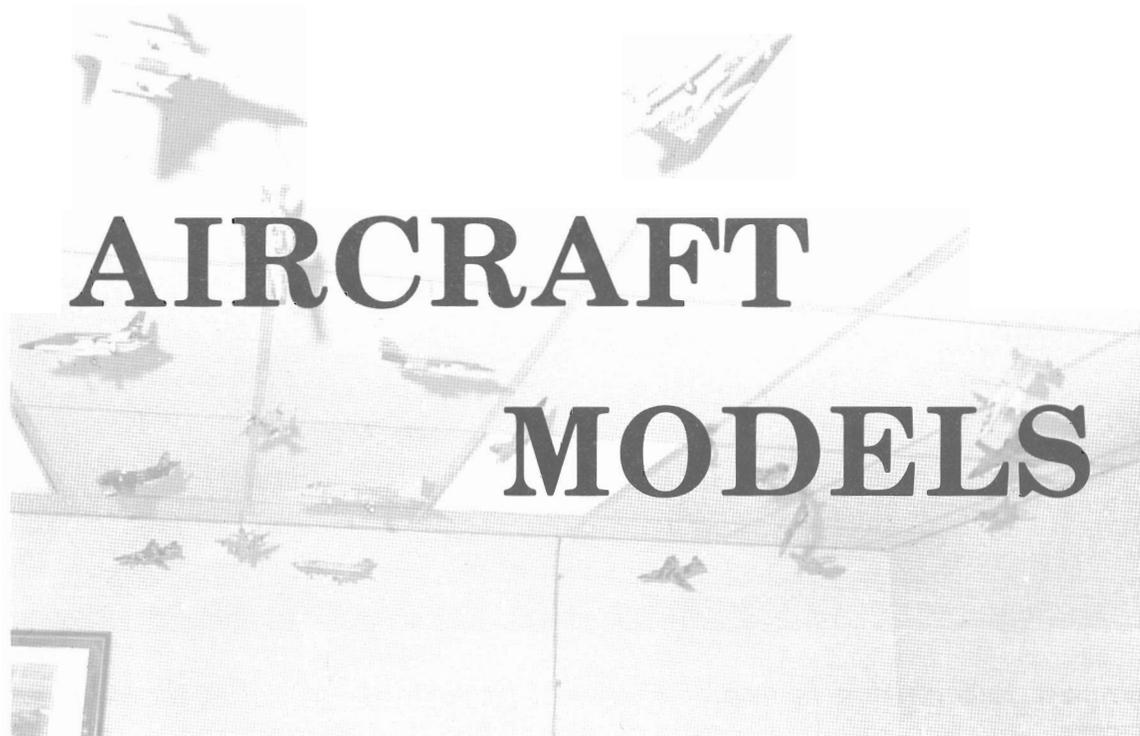
Scale models can be placed in various types of displays and in lounge areas at very little cost. AFR 200-10 is now being revised to provide authority for individual units to secure models from local funds for use in conducting recognition training programs.

It is important to note that in addition to static displays, models can be used in on-going training efforts. The following pages discuss the use of scale models in the identification of:

- AIRCRAFT
- SHIP MODELS
- GROUND EQUIPMENT

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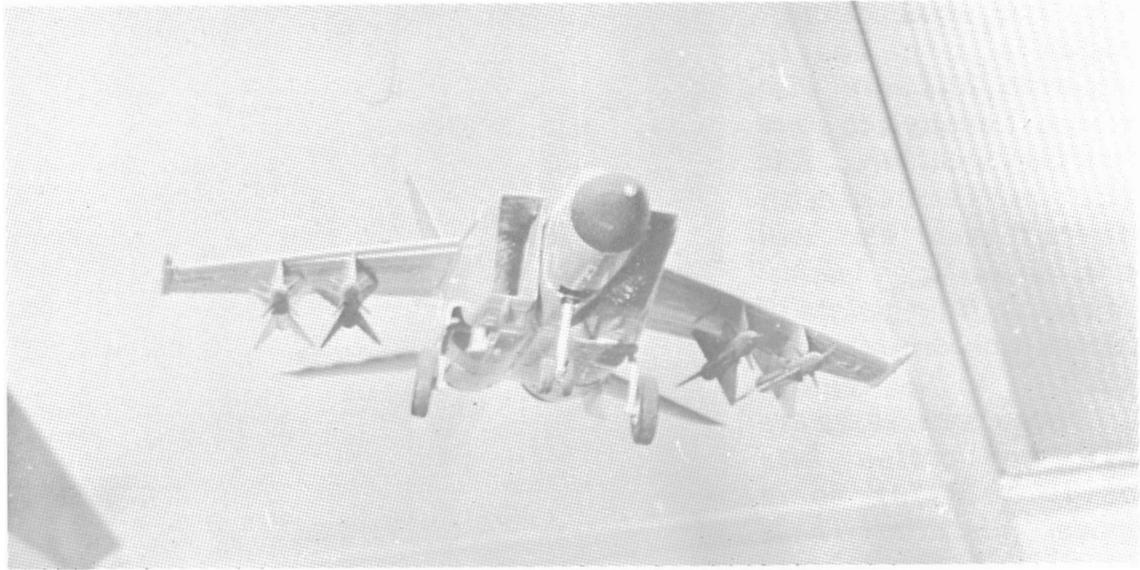


F-14 TOMCAT



Aircraft Recognition is one of the most important uses of scale models. Aircraft models can be displayed, suspended and photographed in any position.

Aircraft Models and the Importance of Scale



When using aircraft models, a constant scale is important to allow for accurate size comparisons. However, some difficulty may be encountered in acquiring all aircraft in the same scale.

F-84F

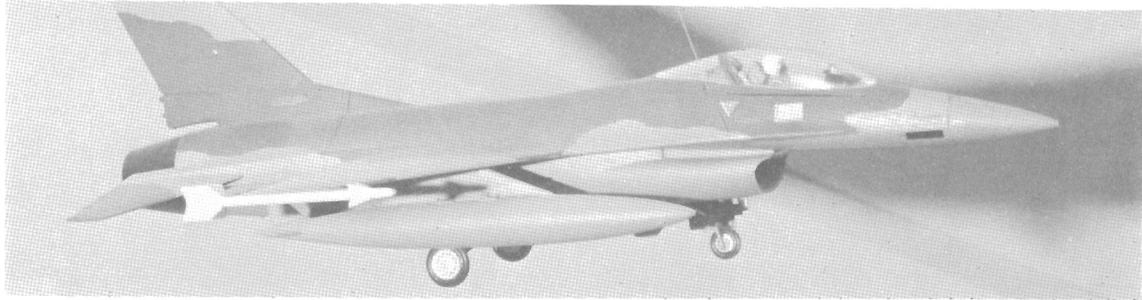
The 1:72 scale aircraft models are fairly accurate and are also compact enough to store in a very small area. It is the most common aircraft scale and will provide sufficient detail to enable finer points of recognition training. In addition to the regular 1:72 scale kits, there are also conversion kits obtainable for some model aircraft. These special kits can be used to convert one particular aircraft into another with minimum cost.



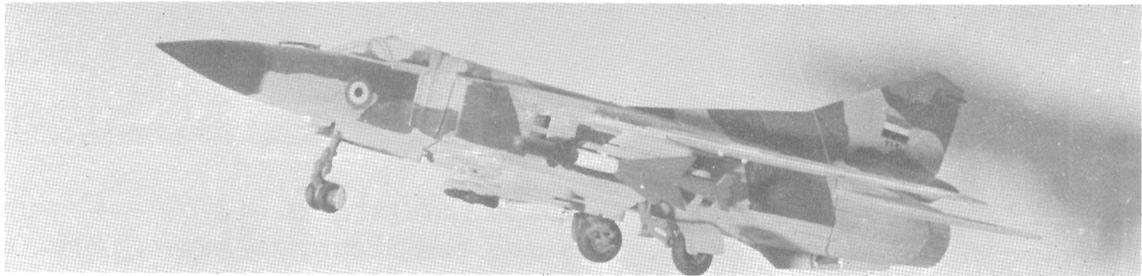
17 MARCH 1981

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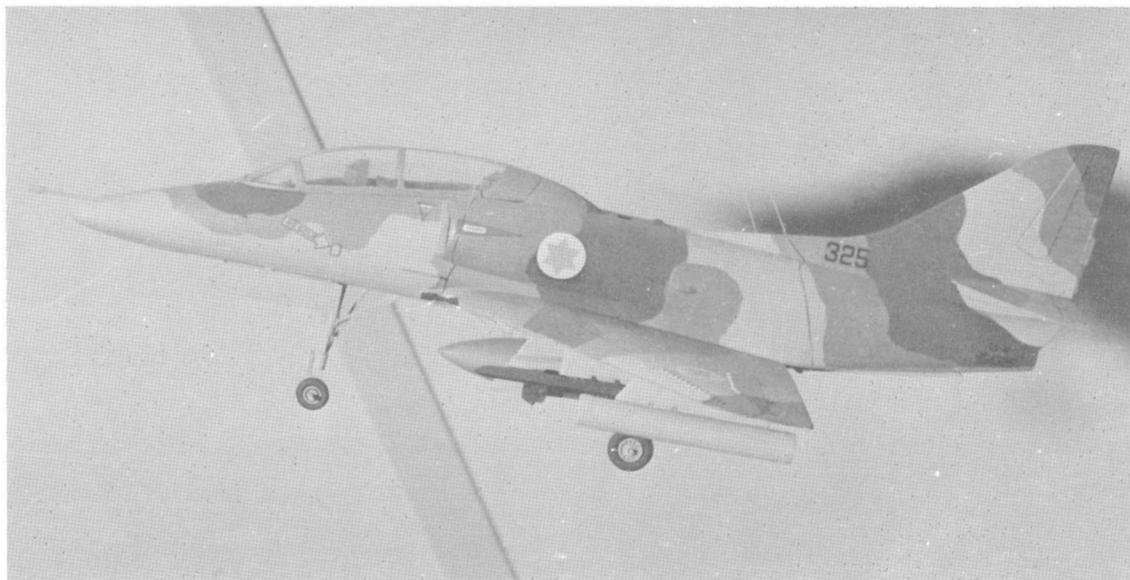
F-16



MIG-23

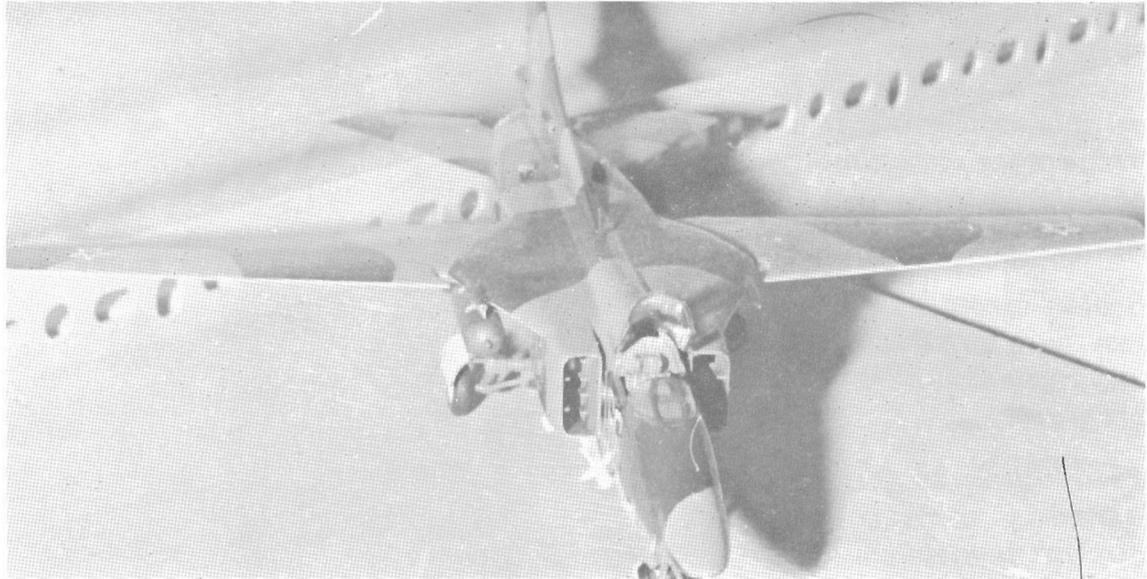


T A-4^{32R}



The 1:72 scale models are large enough to be completed in different paint schemes employed by user countries and can accurately depict various configurations and weapon loads.

MIG-~~27~~ 27 *H&L*



Because models are three-dimensional and can be rotated, students as well as aircrew members will be able to identify recognition features of different aircraft more quickly.

F-4

The aircrew member must be exposed to the aircraft enough times to be able to identify it as friend or foe immediately. Models can help in this process of identification.

Scale aircraft models can be a great asset to any recognition training program.

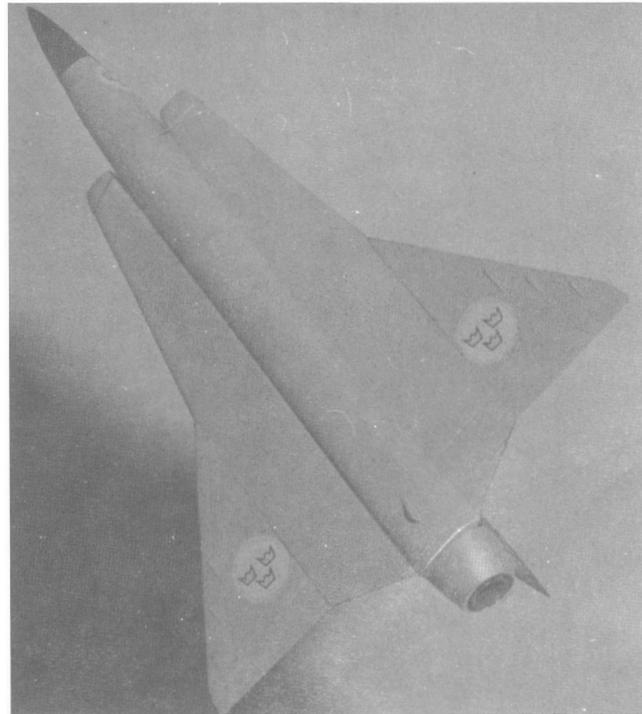
In addition to the uses already mentioned, aircraft models could be passed around at aircrew briefings to facilitate learning of recognition features.



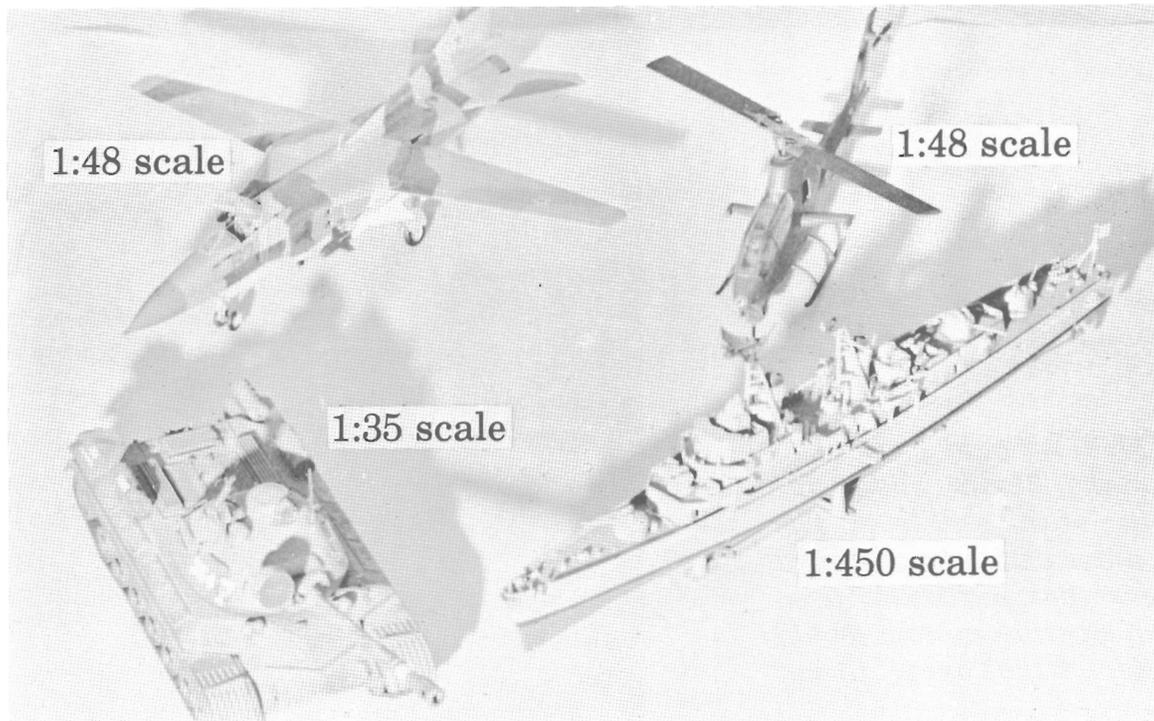
DRAKEN

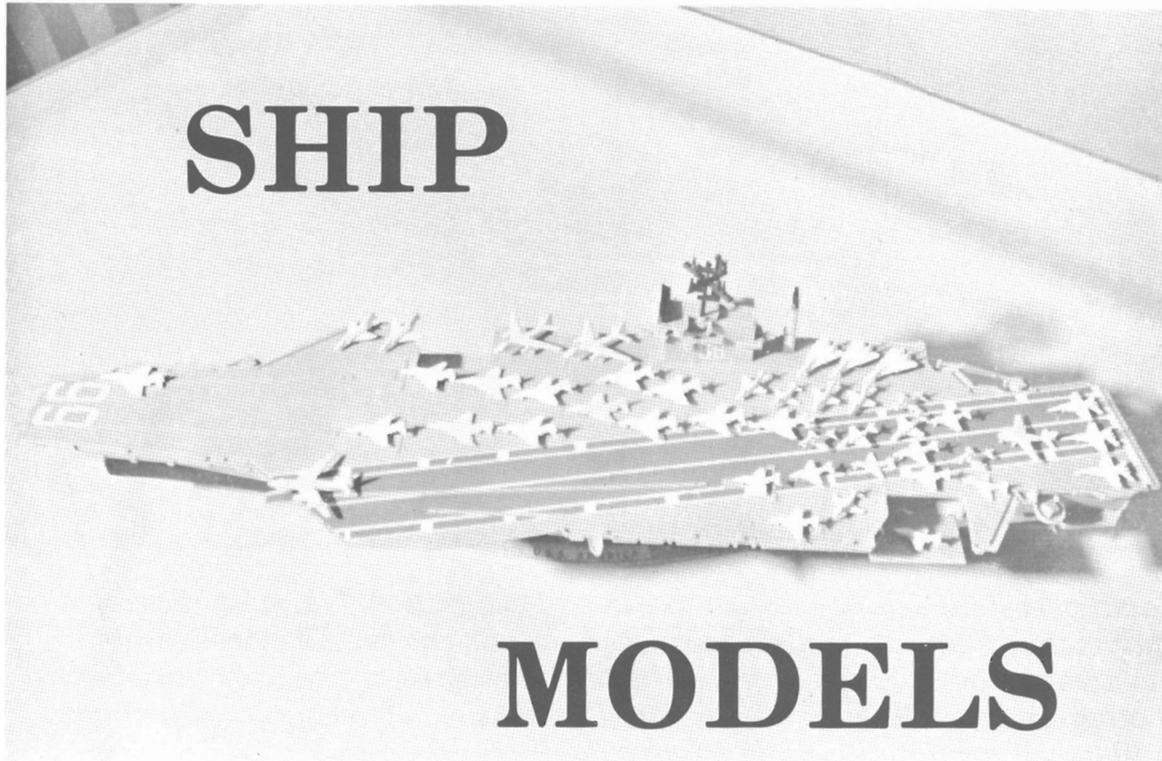


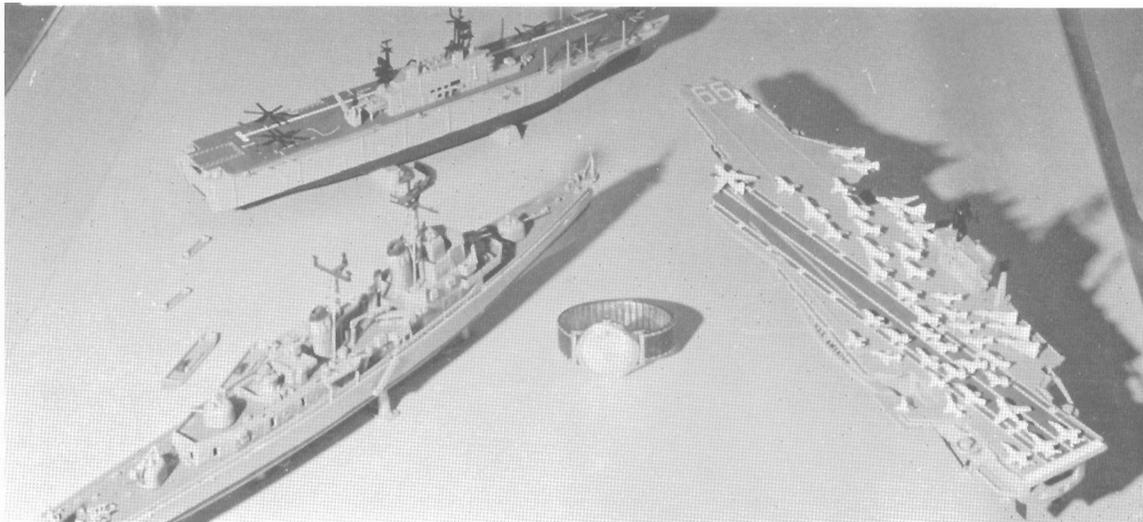
Models could be used to make 35mm slides for use at the unit level. The slides would be designed for that particular area of operations and would depict that areas' threat aircraft.



EXAMPLES OF SCALES:



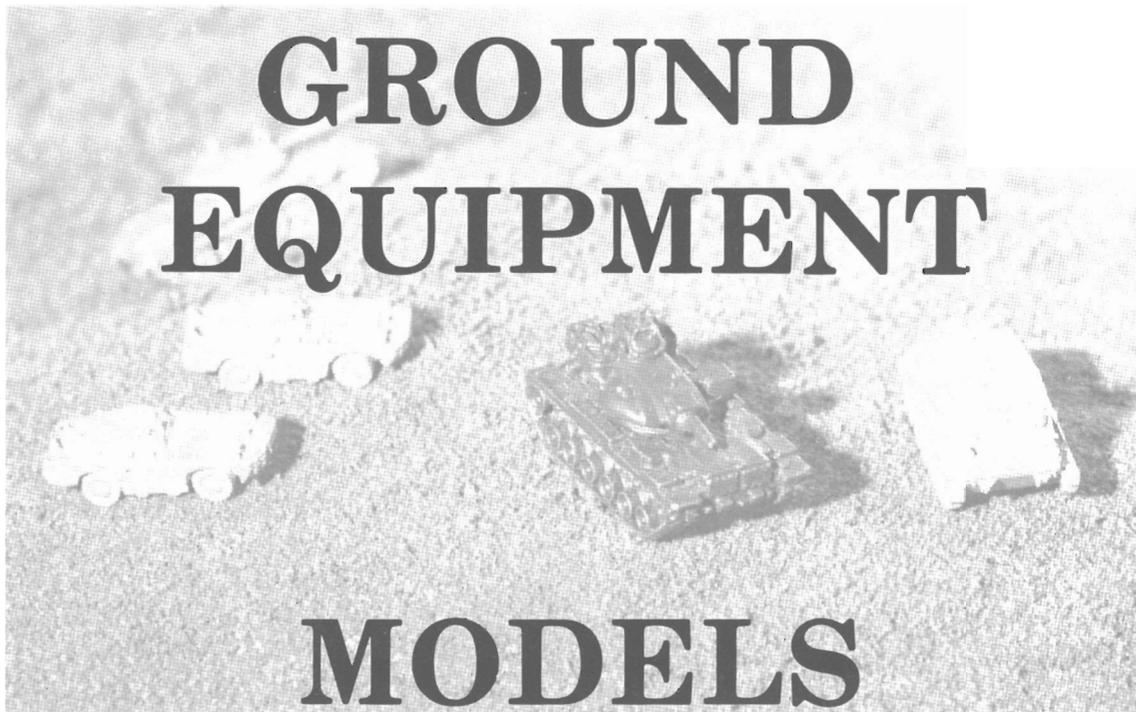




Naval vessel models are not as useful in Recognition Training as ground equipment or aircraft models because of the wide variety of classes and the few actual models made of the different classes. Also, the wide variety of photography available and the standardization of recognition features established for naval vessels make models less practical.

At the present time, the availability of naval vessel models is limited, however, there are sources that still deal in naval equipment. When you contact sources for models of naval vessels, be sure to ask which scales they carry. Naval vessels come in a variety of scales, these are the most popular.

- 1:200
- 1:350
- 1:400
- 1:450
- 1:700
- 1:720





The following photos are provided to show one example of how the 1:285 scale models of ground equipment could be used in recognition training. The intelligence shop at the 31 TFW, Homestead AFB, FL, among others, is presently maintaining a terrain board to teach target acquisition to aircrew members.



At the 31st, the models are displayed on a 6'x8' terrain board of plywood sections. Styrofoam features and structures are in the same scale as the models, 1:285.

**TERRAIN BOARD WITH 1:285 SCALE GROUND
EQUIPMENT**



This is a small area of the previous board.



The terrain board is a depiction of terrain typical to the central region of Germany. Individual models of specific vehicles are displayed on the board. The identity and characteristics of the vehicles are also shown on a card which is put in front of the ground equipment. The system is designed to acquaint aircrews with the appearance of ground equipment vehicles as they would appear from the cockpit and in their probable file formations.

There are several commercial terrain boards available such as the Dunn-Kempf system used by the U.S. Army.



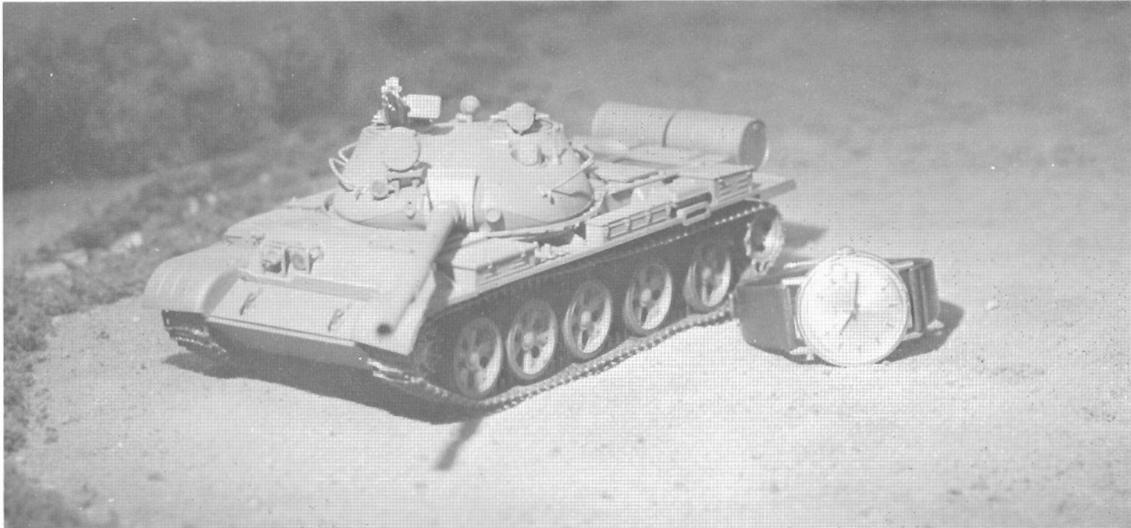


Recognition models are arranged in a formation that would be typical of a certain sized unit (brigade, regiment, etc.) and again, the display is described on a card.

Because of small scale, the aircrew member only has to back off twenty feet (ten feet equals 2850 feet) to simulate the problem of spotting and identifying a piece of armor at 6,000 feet slant range.

Models and terrain can be observed through a hand-held device simulating an A-10 gun sight. This can be done from various distances corresponding to various launch ranges. This technique could be used with any aircraft visual sighting system.

T-62

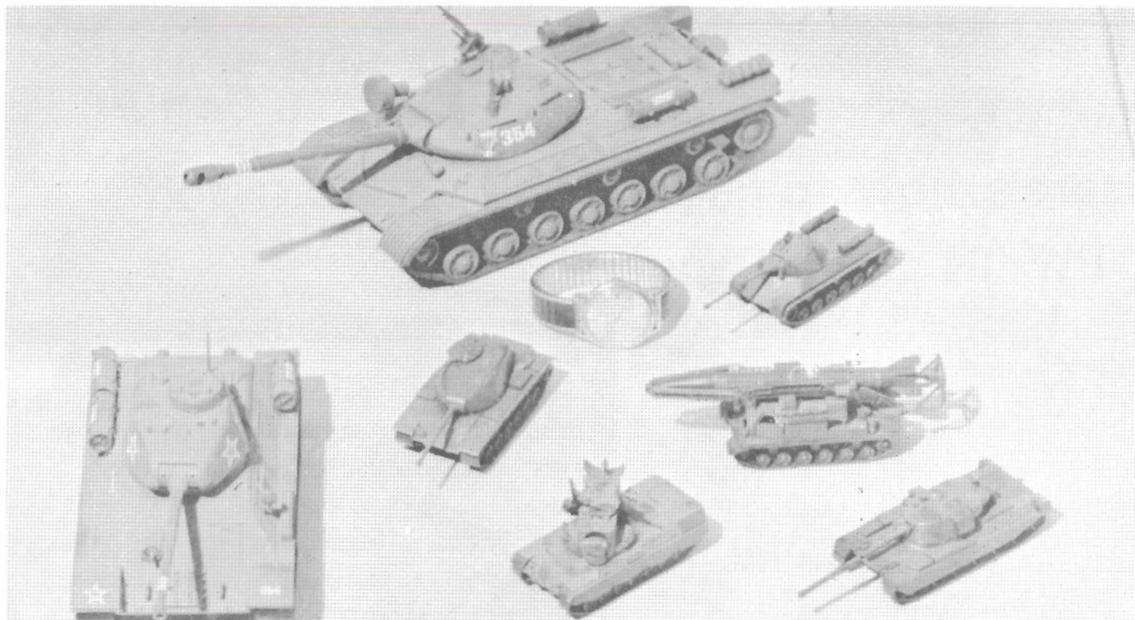


Besides the most popular 1:72 scale used for model aircraft, there are other scales being used such as the 1:48 and 1:35 scale in the construction of various military equipment. The following page shows some examples of scales.

T-62



This photo shows the very small size of the 1:285 scale compared to the 1:35 scale.

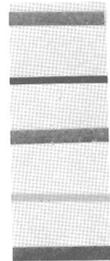


Several civilian companies produce scale models of almost every piece of armored equipment you would expect to see on the modern battlefield, primarily NATO and Warsaw Pact main battle tanks and armored personnel carriers.



Here's how to use the 31st TFW/IN Optic Ranger:

ANOTHER EXAMPLE OF HOW SCALE MODELS CAN BE USED FOR RECOGNITION TRAINING.



4000 ft LCOSS max rg
 3000 half NM
 2500 'open fire'
 2000 high Pk
 1000 min range
 Avoid the Fireball'



IF YOU LOOK DOWN THE HALL TO YOUR LEFT, YOU WILL SEE TWO MODEL AIRCRAFT SUSPENDED ON EITHER SIDE OF THE EXIT LIGHT. THESE MODELS ARE 1:72 SCALE SO ONE INCH ON THE MODEL EQUALS 72 INCHES IN REAL LIFE, OR SIX FEET. THE TILES ON THE FLOOR ARE EXACTLY 12 INCHES, OR 1 FOOT ACROSS. FOR EVERY TILE AWAY FROM THE MODELS YOU STAND, YOU WILL SIMULATE A VIEW OF 72 FEET. WE HAVE PLACED TAPE ON THE FLOOR TO SIMULATE VARIOUS TACTICAL DISTANCES SO YOU DON'T HAVE TO COUNT TILES AND MULTIPLY BY 72 HAVE FUN!

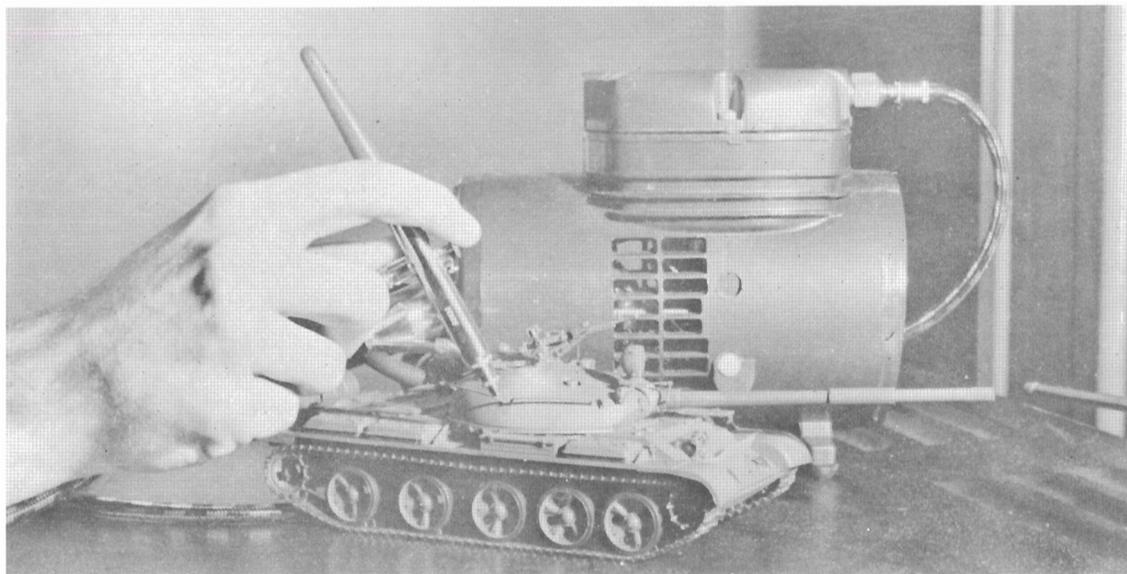


F-4 TAPED DISTANCES ON FLOOR

Modeling Tips

When assembling models, be sure the person involved has experience in this type of work, accuracy and attention to detail are very important. The 1:72 scale is recommended for aircraft model kits since it has the widest available choice of aircraft. When an aircraft is built specifically for use in recognition training, it should be built in the "wheels up" mode. Most model builders build them in the "wheels down" configuration. Aircraft markings should be relevant to the aircrews theater of operations.

When painting models, always try to use color photography as an aid to insure realism in your camouflage and markings. Avoid cementing canopies on aircraft until the model is completely finished.

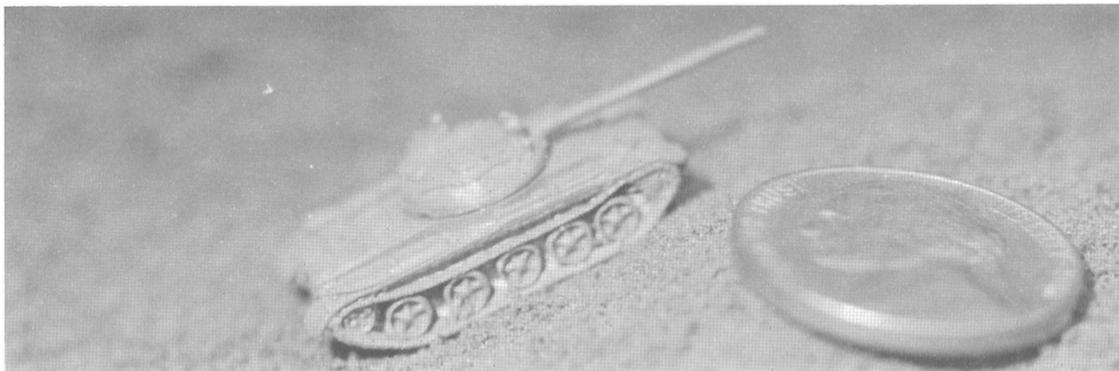


When painting, flat or matte finish is recommended, such as Pactra or Humbrol. Model paints are available in both flat and glossy finishes, so be sure to ask for flat paint. Spray the model with clear matte finish spray to make the glossy decals look like the rest of the plane. This step will also help keep paint from rubbing or chipping off.

Models could be camouflaged as needed to instruct aircrew members/intelligence personnel on how particular pieces of equipment will look like in certain camouflage arrangements. A quiz could be designed at the local level for different pieces of equipment each month. This would be practical, especially when these aircrew members will be expected to contribute to winning a ground battle.

A good idea for a training aid is to produce a transparency simulating the heads up display (HUD) of the locally assigned aircraft. The aid would include a set of tables relating actual distances to the models to scale distances and would be to 1:72 or 1:48 scale. The models would be hung in various attitudes with distances measured off. To use this aid, a crew member would merely move to the desired range, hold up the HUD simulator and look through it at the model. The result would then be a simulated view of the aircraft as the crew might see it in flight.

ORDERING SCALE MODELS



The following information is provided as a guide only in acquiring scale model kits. The United States Air Force does not endorse any one establishment over another for obtaining models.

When ordering models from any source, you should give the kit name, the manufacturer if possible and the scale required where there is more than one scale available for that particular model. There are many models available in different scales for under \$10. For an extensive list of available model prices as well as kit manufacturer and scale, it is suggested that units reference the December 1978 issue of the Joint Service Recognition Journal.

UNITED STATES SOURCES

Alnavco
Box 9
Belle Haven, Virginia 23306

APC Hobbies
Box 122
Earlsville, Virginia 22936

Archers Hobby World
18320 Ward Street
Fountain Valley,
California 92708

AVA International
Box 999
131 AVA Drive
Hewitt, Texas 76643

GHQ Micro Armor
2634 Bryany Ave. South
Minneapolis, MN. 55408

Hanger Hobbies
P.O. Box 7
Bridgewater, Mass 02324

International Plastic Modelers
Society
Membership Secretary
2275 Roswell Avenue
Long Beach, California 90815

Mini Call Models
1525 W. MacArthur Blvd. # 20
Costa Mesa, California 92626

Military Model Distributors, Inc.
3461 East Ten Mile Road
Warren, MI. 48091

Minicraft Models, Inc.
1510 West 228th Street
Torrance, California 90501

*Repli-Kit, Inc.
Catalog Division
48 Avonwood Road
Avon, CT. 06001*

*Sentai Distributors International
8735-A Shirley Avenue
Northridge, California 91324*

*Squadron Mail Order
1115 Crowley Drive
Carrollton, Texas 75006*

*Summit Simulations, Inc.
Suite 322, York Plaza
7250 York Ave South
Minneapolis, Minn. 55435*

*The Squadron Shop
28107 John Road
Madison Heights, MI. 48071*

*U.S. Cavalry Store
1375 North Wilson Road
Radcliff, Kentucky 40160*

*Valley Plaza Hobbies
12160 Hamilton Street
North Hollywood, California 91606*

*WRW Imports Inc.
1375 South Newport
Denver, Colorado 90815*

OVERSEAS SOURCES

*Argyle Model Dockyard Ltd.
Unit C4, Alexandria Industrial
Estate,
Alexandria, Dumbartonshire
Alexandria 56077,
Scotland*

*BMW Models
327/329 Haydons Road
London SW19
England*

*John Piper
2 Acre Road
Kingston-Upon-Thames
Surrey KT2 6EF
England*

*Preston Hobby Modelle
P.O. Box 2280 D86 Bamberg 1
West Germany*

*Sutcliffe Productions
Westcombe, Shelton Mallet,
Somerset BA4 6ER
England*

*NOTE: ALL MODELS FROM JOHN
PIPER ARE IN 1:100 SCALE AND
ARE CAST METAL. IF VEHICLES
ARE NOT READILY AVAILABLE
FROM STOCK, THEY CAN BE
MADE TO ORDER. COST IS
ABOUT 5 POUNDS EACH.*



