



Australian Government
Department of Defence
Defence Materiel Organisation



**Regional
Development
Australia**
HUNTER



me
program

**ASSESSMENT NOTIFICATION
PHYSICS- PRELIMINARY
ASSESSMENT TASK 1 - REPORT**



**TOPIC 1 - THE WORLD COMMUNICATES
BAE SYSTEMS AND G.P.S**

Weighting: 25%

Due Date:

PHYSIC YEAR 11 TASK

OUTCOMES TO BE ASSESSED

- P4: Describes applications of Physics that affect society
- P8: Explains wave motions in terms of energy sources and the oscillations produced.
- P12: Discusses the validity and reliability of data gathered from secondary sources.
 - Accessing information from a range of resources, including popular scientific journals, digital technologies and the internet
 - Practising efficient data collection techniques to identify useful information in secondary sources
 - Extracting information from numerical data in graphs and tables as well as from written and spoken material in all its forms
 - Summarising and collating information from a range of resources
- P14: Draws valid conclusions from gathered data.

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SYLLABUS REFERENCE

- Analyse information to identify the waves involved in the transfer of energy that occurs during the use of GP Systems.
- Analyse information to identify the electromagnetic spectrum range utilised in modern communication technologies
- Identify data sources, gather, process and present information from secondary sources to identify areas of current research and use the available evidence to discuss some of the underlying physical principles used in;
 - Global Positioning Systems

What you need to do in this task:

This is a research task (secondary source investigation). Using reference books, the internet, scientific magazines or other sources.

The research project is to be presented in report format and divided into the following sections:

1. **Introduction**- Identify what Global Positioning Systems are and how they function. Use an appropriate diagram in your report to assist in your explanation.
2. **Current Research** – This is to include a timeline of areas of research leading up to our current use of GPS.
3. **Energy transfers in a GPS System** – This should include a flow chart of waves involved in the transfer of energy for a GPS.
4. **Applications of G.P.S. Systems at BAE** –
 - a) Research the Kingfisher – Unmanned Aerial Vehicle:- What is it? What will it be used for? Give some basic specifications of the plane.
 - b) What are anti-jamming G.P.S. receivers? Why has BAE Systems developed these receivers?
 - c) How are G.P.S. systems used in the M982 Excalibur artillery shell, developed by BAE Systems?

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PRESENTATION

- The body of the report (excluding reference list) should be no more than 2000 words in length.
- All references must be appropriately acknowledged with both, in-text referencing and an end-text reference list. (see Sharepoint or teacher for Harvard referencing techniques).
- Diagrams should be used to support the text.
- A list of references (at least 5) that have been accessed is to be presented to the teacher by to show you have started your research.

PHYSIC YEAR 11 TASK

MARKING GUIDELINES

CRITERIA	MARKS POSSIBLE	MARKS ACHIEVED
<p><u>PREPARATION</u></p> <ul style="list-style-type: none"> • Presents a list of references that have been accessed from at least 6 different web sites and/or books by. For each reference a brief description of the information found has been included. • Presents a list of references that have been accessed from at least 5 different web sites and/or books by but little or no description of each reference has been included. • Presents a list of 5 or less references by • Fails to present a list of references by 	<p>12</p> <p>6</p> <p>2</p> <p>0</p>	
<p><u>INTRODUCTION</u></p> <ul style="list-style-type: none"> • A correct definition of a GPS system and how it functions is thoroughly identified. That is the number of satellites, position of satellites, the type and description of the orbit and a diagram of the trilateration system used by GPS. • TWO diagrams are presented showing the operation of the system. • ONE diagram is presented showing the operation of the system. • Marks will be deducted for failure to thoroughly address any of the specified criteria 	<p>6</p> <p>2</p> <p>1</p>	
<p><u>CURRENT RESEARCH</u></p> <ul style="list-style-type: none"> • A Timeline is drawn to show a number of developments in chronological order. It has a heading and an appropriate linear scale. • Marks will be deducted for failure to thoroughly address any specific criteria. <p>Note: Fail to submit linear scale 3/6.</p>	<p>6</p>	

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<p><u>ENERGY TRANSFERS IN A GPS SYSTEM</u></p> <ul style="list-style-type: none"> A flow chart is drawn indicating the waves involved in the transfer of energy needed for a GPS to operate. (At least 4 steps are shown). This chart should show the energy input into the system and the transfers of energy involved at each step of the process. 	4	
<p><u>ELECTROMAGNETIC SPECTRUM RANGE</u></p> <ul style="list-style-type: none"> Using an appropriate diagram thoroughly identify the sections of the EMS used in GPS technology. Marks will be deducted for failure to thoroughly address any specified criteria 	4	
<p><u>BAE SYSTEMS AND G.P.S</u></p> <p>a) Kingfisher Unmanned Aerial Vehicle:-</p> <p>i) Description of KUAV;</p> <ul style="list-style-type: none"> Describes thoroughly the Kingfisher Unmanned Aerial Vehicle. Outlines briefly the Kingfisher Unmanned Aerial Vehicle No description of the Kingfisher Unmanned Aerial Vehicle <p>ii) Uses of KUAV;</p> <ul style="list-style-type: none"> Describes thoroughly uses for the vehicle Outlines briefly the uses for the vehicle No uses for the vehicle given <p>iii) Specification of KUAV;</p> <ul style="list-style-type: none"> Lists specifications No list of specifications given 	2 1 0 2 1 0 2 0	
<p>b) Anti-jamming G.P.S. receivers:-</p> <ul style="list-style-type: none"> Describes thoroughly why anti-jamming devices are used on G.P.S. systems. Outlines briefly why anti-jamming devices are used on G.P.S. 	2 1 0	

PHYSIC YEAR 11 TASK

<ul style="list-style-type: none"> No description of why anti-jamming devices are used on G.P.S. systems. 		
<p style="text-align: center;">c) M982 EXCALIBUR ARTILLERY SHELL Developed by BAE Systems;</p> <ul style="list-style-type: none"> Describes thoroughly how G.P.S. systems are used in M982 Excalibur Artillery Shell Outlines briefly how G.P.S. systems are used in M982 Excalibur Artillery Shell No description given 	2 1 0	
<p><u>IN-TEXT REFERENCING</u></p> <ul style="list-style-type: none"> Student consistently uses own words and thoroughly and appropriately acknowledges the use of other author's work/ideas Student sometimes uses own words but acknowledges sources appropriately Student uses own words but inconsistently acknowledges sources appropriately Student sometimes uses own words and inconsistently acknowledges sources appropriately Student does not make a serious attempt to use own words but attempts to acknowledge some sources Student does not make a serious attempt to use own words and/or makes no attempt at in-text referencing 	5 4 3 2 1 0	
<p><u>END-TEXT REFERENCING</u></p> <ul style="list-style-type: none"> Student uses a wide range of sources (at least 4 types) that may include books, internet sites, CD Rom, Encyclopaedias, pamphlets, journals, newspaper articles etc. Includes a list of at least 7 references and thoroughly uses a specified format to acknowledge sources of information. Student uses a range of sources (at least 3). Includes a list of references (at least 6) and thoroughly uses a specified format to acknowledge sources of information Student uses some different types of sources (at least 3). Includes a list of references (at least 5) and thoroughly uses a specified format to acknowledge them 	9 8 7	

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<ul style="list-style-type: none"> • Student uses some different types of sources (at least 3). Includes a list of references (at least 5) but inconsistently uses a specified format to acknowledge them. 	6	
<ul style="list-style-type: none"> • Student uses some different types of sources (at least 2) Includes a list of references (at least 5) but inconsistently uses a specified format to acknowledge 	5	
<ul style="list-style-type: none"> • Student uses some different types of sources (at least 2). Includes a list of references (at least 4) but inconsistently acknowledges them. 	4	
<ul style="list-style-type: none"> • Student uses very limited number of sources (1 type). Includes a list of references (at least 4) and thoroughly uses a specified format to acknowledge them. 	3	
<ul style="list-style-type: none"> • Student uses a very limited number sources (1 type) Includes a list of references (at least 3) but inconsistently uses a specified format to acknowledge them. 	2	
<ul style="list-style-type: none"> • Student makes an attempt to provide some form of end-text referencing 	1	
<ul style="list-style-type: none"> • Student makes no attempt at end-text referencing 	0	
HANDING IN ASSESSMENT NOTIFICATION WITH REPORT	2	
TOTAL:	58	

COMMENTS:
